The Mining Journal

Established 1835 — Railway & Commercial Gazette

Vol. CCXXXVI No. 6021 — LONDON, JANUARY 12, 1951 — PRICE 8d

"HUNSLET"
LOCOMOTIVES
STEAM & DIESEL
SPECIAL DIESELS
FOR
UNDERGROUND WORKING
THE HUNSLET ENGINE CO. LTD.
LEEDS 10

CONCENTRATION of MINERALS
by Modern Methods
TUNGSTEN · TIN · CHROMIUM
NIOBIUM · TITANIUM
BASE METALS · RARE EARTHS
ETC. ETC.
HIGHEST EFFICIENCY - LOWEST COSTS
CONCENTRATING TABLES
MAGNETIC SEPARATORS
SCREENING PLANTS
DAVIES MAGNET WORKS LTD.
WARE HERTFORDSHIRE Telephone: WARE 48
M.J.70

Model 7 50-RANGE UNIVERSAL AvoMeter

is the world's most widely used combination electrical measuring instrument because the one instrument covers all measurements normally encountered. Guaranteed accurate to B.S. first-grade limits on D.C. and A.C. from 25 c/s. to 2 Kc/s. Self-contained, compact, portable and simple to operate. Protected by an automatic cut-out against damage through severe overload.

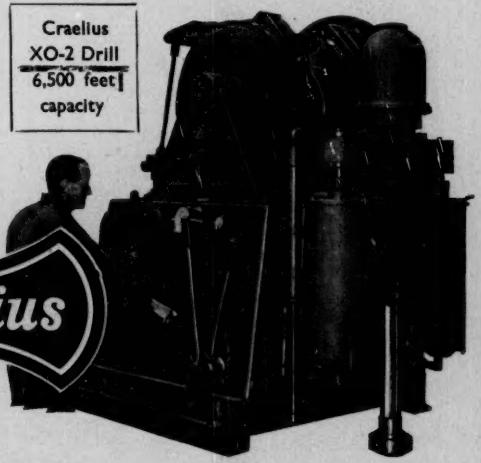
Illustrated literature available from the Sole Proprietors and Manufacturers:

THE AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO., LTD.

EVERY
ESSENTIAL
ELECTRICAL TEST
with
ONE INSTRUMENT

DIAMOND CORE DRILLS AND EQUIPMENT

Craelius XO-2 Drill
6,500 feet capacity



DIAMOND DRILL BITS

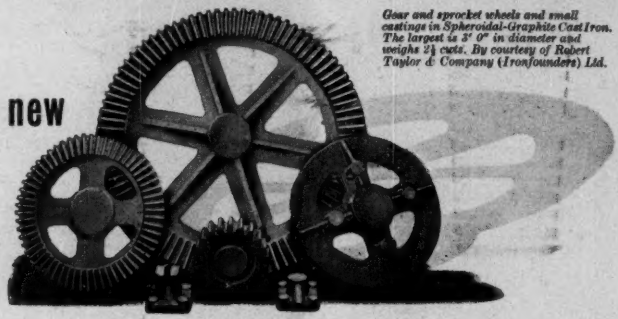
Craelius

CRAELIUS COMPANY LIMITED
12, CLARGES STREET, LONDON, W.1
Telephone: GROSVENOR 1378-9

(Associated Companies)

THE SWEDISH DIAMOND ROCK DRILLING CO., STOCKHOLM
THE CRAELIUS EAST AFRICAN DRILLING CO., LTD., NAIROBI
THE ELECTRICAL PROSPECTING CO., STOCKHOLM
SOCIETE ANONYME CRAELIUS, PARIS

A completely new type of CAST IRON



Gear and sprocket wheels and small castings in Spheroidal-Graphite Cast Iron. The largest is 3' 0" in diameter and weighs 2¼ cwts. By courtesy of Robert Taylor & Company (Ironfounders) Ltd.

—which, in many ways, behaves more like a steel, is now in commercial production. It is stronger than conventional cast iron and exhibits ductility.

These remarkable properties are the result of a process whereby the graphite flakes, a source of weakness and brittleness in conventional cast irons, are replaced by spheroids.

The new spheroidal-graphite cast irons fall into two main classes, with the following properties :—

	Tensile Strength. t.s.i.	Yield Point. t.s.i.	Elongation. %
HIGH STRENGTH (*pearlitic*)	35—45.	25—33.	Up to 3.
HIGH DUCTILITY (*ferritic*)	30—35.	20—25.	10—20.

Production of the ferritic grade normally requires a short anneal. The field of application will be wide and will include many applications for which malleable cast iron or carbon steel are at present used.

Licencees. The process is the subject of a number of patents and patent applications and The Mond Nickel Company Limited has granted manufacturing licences to the following firms :—

- *W. A. Baker & Company Limited, Newport, Mon.*
- *Cooper Brothers Limited, Bethesda Street, Burnley, Lancs.*
- *Fodens Limited, Elworth Works, Sandbach, Cheshire.*
- *Lloyds (Burton) Limited, Wellington Works, Burton-on-Trent.*
- *Sheepbridge Engineering Limited, Chesterfield, Derbyshire.*
- *Robert Taylor & Company (Ironfounders) Limited, Larbert, Scotland.*
- *Sir W. G. Armstrong Whitworth & Company (Ironfounders) Ltd., Close Works, Gateshead-upon-Tyne.*

THE MOND NICKEL COMPANY LIMITED Sunderland House · Curzon Street · London W.1

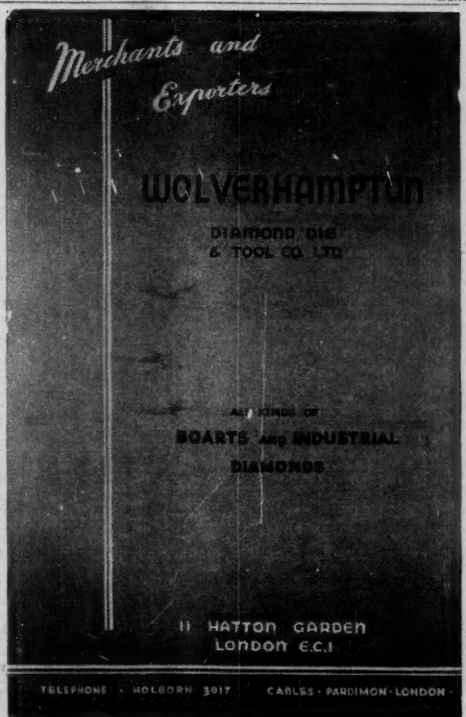
Call, write, 'phone, or wire to:—

MALAYA HOUSE

for information and advice regarding Trade, Industry, Production and general conditions in

SINGAPORE AND THE FEDERATION OF MALAYA

57 TRAFALGAR SQUARE LONDON, W.C.2
Telegrams : MALAWAKIL, LONDON
Telephone : WHITEHALL 9837


Merchants and Exporters
WOLVERHAMPTON
DIAMOND DIE & TOOL CO. LTD.
ALL KINDS OF
BOARTS and INDUSTRIAL DIAMONDS
11 HATTON GARDEN
London E.C.1
TELEPHONE · HOLBORN 3017 CABLES · PARDIMON · LONDON ·

No need for this miner to worry about dust...

Nor need he worry about spillage. The B.T.R. belt service people have been at work in his pit. The job they tackled was the trunk conveyor belting, and in the eleven days they were there they converted its 53 metal fastener joints into B.T.R. 'Tylock' vulcanised joints—all between shifts and with negligible interference with output.

As a result, the atmosphere is clear, there's no fastener clatter over the idlers; spillage is negligible, and motor temperatures and ammeter readings show that friction is reduced. And, of course, there are no fastener breakdowns.

Perhaps we can do as much for you. Send for the facts on this and other jobs. Or better still, have a chat with B.T.R. engineers; they can iron out fastener troubles for you and help lay the dust and reduce spillage.

B·T·R

TAIL END. 1727 YDS.
38 YDS.
52 YDS.
1st NORTH SUB-TRUNK. A. B. C. L. CONYS. AND DEVELOPMENT 1330 YDS. INBYE 74 05 OUTPUT
ELLINGTON COLLIERY.
DIAMOND SEAM.
SECTION ALONG TRUNK CONVEYOR.
16'
9'
TRIPPER
TRIPPER
LOAD
90 YDS. 1 in 38
345 YDS. 1 in 24
92 YDS. DRIFT 1 in 7
220 YDS. 1 in 22
74 YDS. DRIFT 1 in 5.5
357 YDS. 1 in 16
353 YDS. LEVEL
234 YDS. DRIFT 1 in 12
OUTBYE LOADING END
DEVELOPMENT 7·2 OUTPUT
E. CON. 1520 YDS. INBYE 18·75 OUTPUT
TOTAL LENGTH OF CONVEYOR 1727 YDS.
AVERAGE DAILY OUTPUT 1000 TONS.

Photograph by permission of ELLINGTON COLLIERY.

BRITISH TYRE & RUBBER CO. LTD.

Herga House · Vincent Square · London, S.W.1.

Telephone: VICTORIA 3848 Telegrams: BRITGOODS, TELEX, LONDON.

BS38

Track

RMP
RAILWAY MINE & PLANTATION EQUIPMENT LTD.

LIGHT RAILWAY EQUIPMENT

Track and track accessories—wagons of all types and for all purposes—light and heavy diesel locomotives—engine driven welding sets

RAILWAY MINE & PLANTATION EQUIPMENT LTD.

IMPERIAL HOUSE · DOMINION STREET · LONDON E.C.2.

Telephone: CLErkenwell 1777 (8 lines) · Grams: Minplan Ave. London · Cables: Minplan London

A/28

The Mining Journal
Established 1835

Vol. CCXXXVI No. 6021 LONDON, JANUARY 12 1951 PRICE 8d

EDITORIAL and ADVERTISING ENQUIRIES TO:
15 GEORGE STREET,
MANSION HOUSE
LONDON, E.C.4
Tel. Nos.: MANSION HOUSE 5511 & 9182

SUBSCRIPTION RATES:
(Including Postage)
INLAND: 10s. ... 3 months.
18s. ... 6 ,,
32s. ... 12 ,,
ABROAD: 40s. ... 12 ,,

THIS WEEK'S FEATURES
VERMICULITE IN THE COMMONWEALTH - - Page 30
THE DIAMOND INDUSTRY IN 1949—II - - - - Page 32

NOTES AND COMMENTS

Mining in Fiji

We received recently the report of the Department of Mines for Fiji covering the year 1949, compiled by the Inspector of Mines, Mr. James F. A. Taylor. Few new goldfields made such rapid progress in the few years immediately preceding the last war than was achieved by Fiji. Gold was first discovered in 1932 by a prospector Mr. Bill Borthwick working for Mr. Pat Costello. Specimens of gold in water-worn quartz had occasionally been met with previously and are mentioned in Dr. Maclaren's work *Gold*, published in 1908. According to Dr. Loftus Hills, Dr. Malcolm Maclaren predicted at that time, that valuable gold deposits might be expected to be discovered in the interior eventually. Following a boom gold production increased rapidly fron 6,728 f.oz. in 1935 to 118,681 f.oz. in 1941. However the outbreak of the war in the Pacific naturally affected operations severely and the output dropped to 40,407 f.oz. in 1944, since when it has again steadily improved to reach 104,036 f.oz. in 1949, the year under review. At this figure the gold production exceeded the output of any of the Australian states except Western Australia, as well as of New Zealand and New Guinea. Mining is confined at present to the main island of Viti Levu.

Three mines were responsible for the 1949 production, the Emperor Gold Mining Co. (Fiji) Ltd., the Loloma (Fiji) Gold Mines, N.L., and the Dolphin Mines Ltd., generally referred to as the Associated Companies and operating in the Tavua-Vatukoula field in the north of the island. The Mount Kazi mines in the Yanaway area a producer before the war, ceased production in 1946, having exhausted the ore body. The existing group of mines is well equipped and there is a power station at Tavua, some particulars of which were given in our issue of March 4, 1939, p. 202, where the Belliss and Morcom engines were illustrated. Mill practice is noteworthy for the amount of pre-treatment given to the ores previous to cyanidation. After coarse crushing and fine grinding, the residues are treated with the roster gases in a gassing tower, floated, roasted, and the calcine cyanided. Gold recoveries during the period were 90.7 per cent for Emperor ores, 94.1 per cent for Loloma ores and 89.5 per cent for Dolphin ores. Finer grinding and better gassing control improved the extraction during the year. The operating properties owed much of their success to the energy of the late Mr. E. G. Theodore, with Australian finance.

The Emperor Mine was the largest producer in the period under review, with an output of 53,708 f.oz. gold and 14,752 f.oz., silver, from 135,986 tons of ore treated, from which it will be seen that the grade is high, and there were reserves in the middle of the year of 1,025,000 tons averaging 7.9 dwt. per ton. The Loloma Mine treated 18,287 tons for a yield of 26,323 f.oz., gold and 7,992 f.oz. silver. Reserves at the middle of the year were estimated at 48,000 tons, averaging 20 dwt. per ton. About a third of this total was derived from the opencast.

Both the Emperor and the Loloma mines are wet and ten tons of water have to be pumped from the Emperor for every ton of ore hoisted. The Dolphin Mines treated 11,719 tons of ore for a yield of 23,975 f.oz. of gold and 7,005 f.oz. of silver, and the reserves at the middle of the year were estimated at 35,000 tons averaging 25 dwt. The Mistry Mining Co. won 23 f.oz. from 53 tons of ore treated. The lease of the Costello Mines Ltd. were taken over by the Emperor Gold Mining Co. in August, 1947, and has since been worked by that company. During the year there was prospecting of possible deposits on the island of Vanua Levu, started by Australian interests.

Prospecting was also carried out for copper, lead, zinc, manganese, and retroactive minerals. So far only a trial shipment of 100 tons of manganese to London have been made by Manganese Development, though samples were forwarded to ore-buyers in Australia, United States and the U.K. The manganese ore occurs in small pockets, though the grade is high, samples indicating as much as 56 per cent manganese, iron 1.2 per cent, silica 2.5 per cent and phosphorus 0.12 per cent, but the overall extent so far revealed appears to be small. Under the Colonial Development and Welfare Fund two geologists have been appointed to undertake a systematic survey of the whole Fiji group; the amount of geological work which the Department of Mines has been able to do having been naturally limited. The number of persons employed directly in mining during the year was 1,305, principally native Fijians, whose efficiency is highly spoken of.

Uganda in 1949

The Report of the Survey, Land and Mines Department of Uganda for 1949 reveals the continued quietude in mining in that Protectorate. The bulk of the report is concerned with the land survey, town planning, rating and registration. Very little space is devoted to mining. Gold continued to be the chief product, but the output was only 685 oz. as compared with 5,942 f.oz. as far back as 1934. The explanation is that alluvial deposits are being progressively worked out, and no reef mining appears to exist to-day. The hope is expressed that the appreciation in the sterling price of gold may stimulate activity. Despite the interest excited by the discoveries in the neighbourhood of Kager

river, some considerable time before the last world war tin production has tended to decline and last year totalled 237 tons of concentrates as compared with 437 tons in 1934. The bulk of the output comes from the Mwirasandu mine of Kagera Mines, Ltd. Production of wolfram, though very small, appears to be increasing and amounted to 174½ tons, or about 10 tons more than in the previous year; the average grade of the concentrates shipped was around 70 per cent. The Lohesa mine is the only property where any considerable underground development has been done and this suggests that the wolfram content of the quartz veins goes down. It has been reported just recently that an Anglo American Group is to buy one of the two largest mines near Kigesi with E.C.A. funds from which it is hoped to obtain an output of some 200-300 tons a year. The main interest for the future of mining seems to be divided between the phosphate and the copper deposits. The extent of the phosphate deposits is still unknown but in one area some 5,000,000 tons of rock of between 8 and 35 per cent P_2O_5 is believed to be indicated; however no mining was attempted last year. The other prospect is for copper-nickel-cobalt ore about Kilembe in Toro Province. We had occasion to note recently the plans to extend the railway from Kampala towards the Kilembe foothills of the Ruwenzori range, where, according to earlier estimates, the existence of some 1,700,000 tons of ore giving 4.21 per cent copper with small amounts of cobalt and nickel are understood to have been indicated. Some 314 natives were engaged on underground development and surface and diamond drilling last year, but the production stage was not reached. Minor products recorded during the year were 67 tons of lead, 16 tons of beryl, 14 tons of bismuth (about double the figure for 1948), 3,411 lb. of mica, 2½ tons of tantalite ores, 7,283 tons of salt, and 200 tons of amblygonite.

Japanese Coal and Steel Production

According to the latest reports published by S.C.A.P., the coal production in Japan amounted to 18,575,000 tonnes during the first six months of 1950, representing a slight decrease against the corresponding period of the previous year when the output reached 18,839,000 tonnes. The noteworthy fact, however, is the increased productivity. While the number of underground workers was about 250,000 during the first half of 1949, only 230,000 underground workers were employed during the first half of 1950. The average output per underground worker per month rose since Japan's capitulation, as follows: 1945, 7.9 tonnes; 1948, 11.3 tonnes; first six months 1949, 11.3 tonnes; first six months 1950, 13.4 tonnes. The record monthly output per underground worker was registered in 1935, when it reached 24.5 tonnes. During the first six months of 1950 Japan imported 173,000 and exported 300,000 tonnes of coal, thus the monthly average imports amounted to 29,000 and the exports to 50,000 tonnes, while the monthly average imports in 1949 were 142,000 and the exports 65,000 tonnes.

During the first six month of 1950 the total iron ore output reached 371,389 tonnes (metal content—196,945 tonnes) as against 310,634 tonnes of ore (metal content—159,663 tonnes) during the corresponding period of 1949. The following table shows the increased output during the last few years :—

Monthly Average Output in Tonnes

	1947	1949		1950
		Whole year	First six months	First six months
Iron ore ...	41,370	64,274	51,772	61,898
Metal content	20,988	32,757	26,611	32,824

During the first half of 1950 the output of pig iron increased to 1,025,306 tonnes as against 675,734 tonnes in the corresponding period of 1949. No pig iron was imported during the first six months of 1950, while 55,754 tonnes were imported during the first half of 1949.

The monthly average output of 2,353 tonnes of ferro alloys during 1948, and 4,459 tonnes during 1949, increased to 5,166 tonnes during the first half of 1950.

The following table shows a considerable increase of steel output in Japan, achieved in the first half of 1950:

	Steel Ingots and Castings (tonnes)	Finished Steel (tonnes)
1948 (monthly average)	142,819	105,286
1949 (monthly average)	259,284	185,016
1950 January	328,375	218,413
February	323,622	241,289
March	366,254	277,073
April	386,377	254,515
May	413,894	262,675
June	394,906	314,868

Canada's Mineral Output-1950

(From Reuter's Correspondent)

Ottawa, by Airmail, January 5

Production by Canada's mining industry exceeded the 1,000 million dollar mark in 1950. The total of $1,040.9 million in 1950 represented a gain of 15 per cent over the 1949 value of $901.1 million. The increase was quite general throughout the list of products but the principal gains were in crude petroleum, asbestos, gold, zinc, copper and nickel. For each of these, except gold, the 1950 value was the highest on record.

The estimated value of all metals was $620.9 million or 15.2 per cent more than in 1949. During the early part of 1950, the trend in base metal prices was downward but later advances yielded higher averages than in the previous year. Copper production was down slightly in tonnage but was up 17 per cent in value, nickel declined 4.3 per cent in quantity but advanced 14.5 per cent in value, zinc advanced 8 per cent in tonnage and 27.5 per cent in dollars, while lead was up 6 per cent in tonnage and off 2.8 per cent in value.

Gold worth $168.5 million in 1950 was again the leading mineral product in regard to value of output. On October 1, 1950, the Canadian dollar was permitted to find its own level in relation to the United States dollar, this resulting in an average price of $38.04 per troy oz. in Canadian funds in 1950, compared with $36.00 per oz. in 1949. The quantity of gold recovered last year was 7.3 per cent greater than in 1949.

Substantial increases in Alberta's crude petroleum production was largely responsible for the increase of 9.8 per cent in the value of mineral fuels to $201.7 million. Crude petroleum output in 1950 totalled 29.1 million barrels compared with 7.6 million barrels in 1946, the year preceding the discovery of the Leduc field. Coal production remained about the same as in 1949 with a value of $110 million.

Non-metallics or industrial minerals were valued at $92.1 million compared with $64.6 in 1949. Asbestos production reached a new high of 877,650 tons at $64.9 million. The tonnage of gypsum at 3,589,000 tons was up 19 per cent and its value exceeded $6.1 million. Salt of all grades was valued at $6.3 million, an increase of 14 per cent. Fluorspar, the greater portion from Newfoundland, had a value of $1.5 million which was slightly lower than in 1949. Sulphur in the form of pyrite and sulphuric acid had an estimated value of $2.3 million.

Output of structural materials was greater than ever. Shipments of cement amounted to 16.7 million barrels valued at $35.7 million. Lime was valued at $12.3 million. Clay products were worth $20.9 million. Stone for buildings, monuments, railway ballast, etc., had a value of $22.6 million, and sand and gravel, mainly for highway construction, totalled $34.5 million.

South Africa

(From Our Own Correspondent)

Johannesburg, Jan. 2

Pilot plants for the extraction of uranium are already in operation on some gold mines on the Rand in order to provide data for the design and erection of full-scale plants. Although hints to that effect have been current for some time, the fact could not be openly stated until it was officially disclosed in Pretoria recently, for it is an offence under South African law to give unauthorized information about the discovery of uranium.

An official survey of the circumstances leading up to the extraction of uranium from the mines, summarized in *The Star*, Johannesburg, says that when the importance of uranium was realized during the latter part of the war a systematic investigation was undertaken by the Mines Department of possible sources of uranium in South Africa, and close attention was given to the gold mines as a possible source of supply on a substantial scale.

URANIUM—A BY-PRODUCT

Uranium occurs in small quantities in almost all the gold-bearing reefs of the Witwatersrand and its extensions. Examination of borehole cores has shown that uranium minerals are also present in the reefs of the new goldfield of the Free State.

The problem related to the economic recovery of uranium from the gold ores of the Witwatersrand has been under intensive investigation by the Government Metallurgical Laboratory in collaboration with laboratories oversea for a considerable period. The problem has presented considerable difficulties in view of the small amount of uranium present in the material to be treated, but from the technical standpoint is now rapidly approaching a satisfactory conclusion.

In the investigations undertaken, the gold mining industry has given its active co-operation both by provision of material and facilities at the mines and also by seconding extra personnel to the laboratory. The investigations have reached the pilot plant stage, and suitable plants have been erected and are in operation on several of the mines in order to provide the data for the design and erection of full-scale plants.

Since the uranium content of the gold ores is extremely small, it would not be an economic proposition to mine these ores merely for the recovery of uranium. In certain instances, however, where sufficient uranium is present, it does become an economic proposition to mine and process the uranium in conjunction with the recovery of gold, since the major part of the mining and crushing costs is then borne by the main product—gold—and uranium is regarded as a by-product.

The advantage of South Africa as an important potential producer of uranium arises from the extensive scale of gold mining in the Union and the large tonnages being treated. Even so, the uranium content of the ores in some mines is too small to warrant its extraction. A careful survey is being made of the reserves of uranium-bearing ore which it may be possible to exploit.

It will be remembered that a recent announcement by the Department of Mines stated that South Africa has made an agreement for the sale of uranium to the United States and Britain, and that the first uranium will come from West Rand Consolidated, Daggafontein, Blyvooruitzicht and Western Reefs. Full-scale plant will, it is expected, be ready at West Rand Consolidated in the second half of 1952, at Blyvooruitzicht and Daggafontein in about three years and at Western Reefs about six months later.

While gold will for long remain South Africa's chief mineral product, other minerals are taking increasingly important places in the country's economy. The new plant at Rustenburg Platinum Mines is complete and the plant has been crushing to full capacity for some months. The reduction plant at the Union Platinum Mines section (taken over by Rustenburg Platinum Mines) has also reached full capacity.

PLATINUM PRODUCTION EXPANDING

This expansion in production is reflected in the latest figures of platinum metals issued by the Department of Mines. It is shown that production of crude metallics in the first 10 months of 1950 amounted to 199,187 oz., compared with 91,386 oz. in the same period of 1949, and a total of 120,020 oz. for the whole of 1949.

Sales of platinum metals were 85,778 oz. in the first 10 months, against 78,009 oz. in the corresponding period of 1949 and 94,092 oz. in the full year. Reflecting both the increased volume of sales and the higher price for platinum, the value of sales in the first 10 months of 1950 was £1,655,031, compared with £1,056,725 in the same period of 1949 and £1,343,589 in the whole of 1949.

Thus it will be seen that production and the value of sales in the first 10 months had already far exceeded the results for the whole of 1949, while the volume of sales was rapidly approaching the previous year's total. For the whole of 1950 sales should be comfortably in excess of 100,000 oz.

Diamonds are in the news, too. The Premier Mine, re-opened early last year, has made history again by producing an exceptional gem weighing 195 carats, described as a blue-white "blocky piece." It is of perfect colour and good shape, and is valued at more than £60,000. It was, of course, at this mine that the famous Cullinan diamond was found in 1905 and the Jonker diamond in 1934. The new stone is smaller and less romantic than the former giants, for it was found in the normal process of recovery on one of the grease tables. Its value of £60,000 compares with about £3,000,000 at which the nine diamonds cut from the Cullinan stone are valued, and £143,000 for which the Jonker diamond was sold (the latter stone having been offered for sale recently for £500,000). The continued emergence of big diamonds from the mine, however, is gratifying.

Returning to the Department of Mines' statistics, a big improvement in coal exports is seen in the first 10 months of 1950. The total was 2,171,682 tons, compared with 2,048,937 tons for the whole of 1949. Production and sales of coal are now certain to have set up new high records when the full year's figures are known.

INCREASED LABOUR FOR O.F.S.

Against these facts, news from the developing gold mines in the past month has been rather overshadowed. Nevertheless good progress is still being reported. The reef intersection by the Charles shaft at Stilfontein was satisfactory enough, even though many investors continue to look for miracles. The average assay of 21 sections was 27.1 dwt. over 10.1 in., equivalent to 247 in.-dwt., which is a good, payable result, especially in view of the shallow depth of the Vaal Reef at that point (2,402 ft.).

From the Free State it is reported that Virginia No. 1 shaft has progressed 1,775 ft. towards the reef, lying at 3,750 ft., and that No. 2 shaft had covered 1,573 ft. of the 3,100 ft. to the reef.

An encouraging feature of development in the Free State is that the native labour supply is being maintained very well. Although the total supply for gold mining was dropping in the second half of the year, the Free State supply resisted the trend after July and started to rise again. In August there was an increase of 162; in September, 792; and in October (the latest figure available for the Free State analysis) a further rise of 562, bringing the total to 17,731, compared with a peak of 19,849 in May and 11,408 at the beginning of 1950.

Vermiculite in the Commonwealth

Little more than a quarter of a century ago vermiculite had no commercial applications, being regarded as an entirely useless mineral. Production only originated in 1923, when plans were made to work a deposit in Colorado, refine the ore, and prepare the product by roasting to cause exfoliation. About the same period it was also decided to work a deposit in Montana and sell the expanded or exfoliated material as an aggregate in magnesium oxychloric cement products, or as a lightweight substitute for cork in heat and sound insulation. Nowadays vermiculite is produced in the United States by several concerns, the bulk of the output being obtained from the Libby deposit, which has been described as a mountain about a thousand feet high and nearly a square mile in extent, consisting almost wholly of vermiculite.

For nearly 20 years the United States remained the sole producer of vermiculite and was able to develop valuable applications for the mineral in many fields, long before the rest of the world had an opportunity of undertaking investigations on a commercial scale. Since the war the supply position has been transformed, however, by the emergence of South Africa as a producer of vermiculite on a very large scale (29,284 s.tons in the first half of this year) and by the discovery of exploitable deposits in other Commonwealth countries. To-day, the Commonwealth is actually earning dollars by assisting American producers to bridge the gap between domestic consumption and supplies. Being independent of dollar sources for their requirements, Britain and the Dominions are rapidly expanding their own consumption of vermiculite.

OUTPUT IN S. AFRICA

Vermiculite was first recorded in the Union from the corundum fields of the Northern and Eastern Transvaal, where it occurs as a thin casing between the corundum reefs and the altered wall rocks. In the Palabora area the mineral was first considered merely as an accessory to apatite and not till 1936 was [illegible] value realized. Exploratory work soon revealed [illegible] area of serpentine which contained large reserves of vermiculite. The deposit covers an area about three-quarters of a square mile in extent and by the end of the war had been proved in places to a depth of more than 80 ft. In this locality the vermiculite occurs as large, platy aggregates, which are capable of fairly easy sorting and grading. The reserves at Palabora are estimated at over 25,000 tons, and it has been authoritatively stated that this occurence is actually superior to the Libby deposit in both extent and quality of the ore.

The ore body at Palabora was explored by pits located over an approximately circular area 900 yards in diameter and by sinking shafts, which remained in vermiculite-bearing serpentine to a depth of 60 ft. Below this depth a progressively larger core of phlogopite was encountered. Mining presents no difficulty and is undertaken by African labour at very low cost, while transport facilities are such that the South African material can actually be delivered to New York more cheaply than the product of the Libby Mine. Exploitation of the Palabora deposit was delayed by the war and it is only within the last four or five years that operations have been on a fairly substantial scale. There are now several companies in production and it has been reported that one concern hoped to increase its output to 1,000 tons a day.

Other promising deposits have been located elsewhere in the Union. An occurrence in the Middelburg area of the Transvaal is estimated to contain hundreds of thousands of tons of payable vermiculite, while deposits said to be of considerable size have been reported from the Pietersburg district.

Since 1937, the Government Metallurgical Laboratory has interested itself in the examination of vermiculite from the South Africa deposits in order to further its economic development and use. Some time ago officials of this laboratory expressed the opinion that the size of the deposits was great enough to warrant a very energetic pursuit of large markets. Producers were therefore advised that a liberal outlook for development and experiment under competent technical guidance was likely to be well repaid. Enquiries have since been received from all over the world, and considerable attention is being devoted to the expansion of the export trade.

PRODUCT DEVELOPMENT

The manufacture of vermiculite products from the South African material was started at Johannesburg in 1944, and has grown into an important industry. From the point of view of South African consumption, vermiculite, which is sound-proof, heat-proof, rot-proof and vermin-proof, was expected to have an important part to play in the rising demand for lightweight concretes, prefabricated materials and plastics of all kinds. Production was concentrated initially on flooring, refrigeration and other insulation products, and refractories. Attention was also directed to the large-scale production of pre-cast, light-weight concrete slabs. Vermiculite formed the basis of a prefabricated housing project conceived on a very large scale. After a large amount of experimental work dating back to pre-war years, the originators of this scheme developed and patented binding materials which, mixed with vermiculite, gave a block or slab with high crushing strength, high heat insulating value, and, when suitably surfaced, weather resistance combined with attractive appearance. Different methods of preparation and other binders were combined to produce flooring and roofing materials of various types. Vermiculite roofing, it was stated, could be moulded and coloured to resemble tiles or even thatch.

PRODUCTION ELSEWHERE IN THE COMMONWEALTH

In Southern Rhodesia the production of vermiculite now exceeds 100 tons a month. Last year it was reported that one of the leading producers had finished all development work and was engaged in opening up the working faces for comparatively large-scale production. A contract was signed with the United States for the entire output of the mine, excluding a comparatively small amount earmarked for local consumption, and it was anticipated that over a period of two years shipments were likely to realize £500,000. Blocks, bricks and flooring tiles of Rhodesian vermiculite are now being manufactured near Salisbury.

Several occurrences of vermiculite have been located in Western Australia. In 1943 there were initial outputs of 343 tons from the Young River deposit, 65 miles from Ravensthorpe, and 20 tons from Yellowdine. Other occurrences of potential importance are situated at Bulong, east of Kalgoorlie, and there are possibilities at Emu Creek, in Queensland. Australian production was 82 tons in 1947; 151 tons in 1948; and 162 tons in 1949.

Occurrences are also known in Tanganyika, Kenya and Uganda, and have been reported from Nigeria and the Gold Coast, but apart from trial shipments from East Africa there has so far been no Colonial production. Promising deposits were recently discovered in the Tumpur and Hassan districts of the State of Mysore.

PREPARATION AND APPLICATIONS

At present the Union of South Africa is supplying the entire British market. The ore is shipped in various grades of crude vermiculite, which is treated in the United King-

dom to yield products of the types most suitable for particular applications. When the raw ore is heated to about 2,000°F., the water vaporizes to produce an expanded product of remarkably low density and high insulating properties. The weight ranges from 3½ to 8½ lb. per cu. ft. according to grade, and thermal conductivity is between 0.252 and 0.45 BTU/HR/. Vermiculite is chemically inert. Prominent importers have established treatment plants in a number of British towns and are working in close association with firms in Western Europe.

—IN CONCRETE

The largest market for vermiculite in this country is in the building field. A very large proportion of the current building programme is allocated to large constructions such as public buildings, schools and blocks of flats. Import difficulties have encouraged the modern tendency to save timber by substituting concrete, either pre-stressed or *in situ*, and constructing roofs of the flat or barrel-vault type. In common with all other forms of concrete, this material is subject to expansion and contraction, involving the introduction of an insulating medium, which has to be light in order to avoid additional weight. This affords an obvious application for vermiculite plaster as a lightweight screed. Vermiculite averages 5 lb. per cu. ft. as compared with 120 lb. per cu. ft. for sand. Furthermore, the fire-resisting properties of vermiculite allow the thickness of the protection to be drastically reduced. Vermiculite has a melting point of about 2,500°F. and produces a plaster one inch of which gives up to four times the fireproofing effect of ordinary plaster. An inch of vermiculite concrete gives the same fireproofing protection as over a foot of ordinary concrete.

Used in bricks, floors, blocks and walls, vermiculite concretes give nearly ten times as much thermal insulation as does the same amount of sand-and-gravel concrete. Thus, an eight-inch thickness of vermiculite brick will furnish the same amount of protection against heat and cold as will a six-foot-thick wall of ordinary masonry. Loose vermiculite is also being extensively used as an insulating material that is either poured or blown into place between walls already constructed, or even into the hollows of concrete buildings.

—IN PLASTICS

Vermiculite plasters also have outstanding acoustical properties which render them especially suitable for the walls and ceilings of broadcasting studios, hospitals, schools, etc. Highly resistant to moisture, they will not deteriorate or give off any objectionable odour when wet. As an anti-condensation medium vermiculite is frequently sprayed on to metal or asbestos cement. Walls plastered with vermiculite are crack-proof, yet nails can be driven through the plaster.

Apart from the rapidly increasing demand for vermiculite concrete and plasters for *in situ* work, there is a growing demand for this versatile material in the form of pre-cast blocks, bricks and slabs, both solid and hollow.

The weight-saving factor is now being exploited in the United States to such an extent that millions of tons of steel are saved every year by encasing the steel staunchions and columns of buildings with vermiculite concrete instead of with the ordinary cement and sand concrete. The actual saving may be anything up to 100 per cent in dead weight, made up in fillers. This saving in construction dead-load is already bringing about radical recalculations in architectural design.

—AS A REFRACTORY

Britain's engineering industry is also finding important applications for vermiculite. As a refractory the mineral is in demand for all types of hot water tank boilers, kilns and furnaces, whether operated by electricity or gas. Vermiculite coarse granules are used as a loose filling insulation both in factories and homes, underneath the floor-boards for heat insulation or underneath the floor-boards to eliminate noise. One of the latest applications for vermiculite is for the slow cooling of steel. On the Continent vermiculite is also being used for fire-resistant paints, an application which has not yet been exploited in the United Kingdom.

—IN HORTICULTURE

The uses of this remarkable mineral are by no means confined to construction work. For instance, although vermiculite is not a fertilizer and has no nutritive value, the exfoliated material is currently being used to aid plant growth. Due to the intense heat to which it has been subjected the expanded mineral is completely sterile, no fungi, bacteria or other forms of living matter which might injure plants being able to survive a furnace temperature of 2,000°F. Expanded vermiculite is also so porous that it is almost impossible to drown plants growing in this material. Vermiculite is able to absorb and hold soluble fertilizers to a degree that humus cannot equal. It is claimed that root cuttings may be obtained from three days to three weeks sooner when grown in vermiculite than when grown in ordinary sand or soil, and that the mineral is far easier to handle than are the much heavier sand-and-soil mixtures.

CONSUMPTION LARGE AND EXPANDING

In the United States the consumption of vermiculite for all purposes is in the vicinity of 167,000 tons a year. In Britain the demand is still relatively small, since the material has only become available since the war, but very rapid headway is now being made. According to one of the leading firms of importers, Dohm Ltd., consumption has been limited by the extent of the building programme and it has also taken some time for architects to become "vermiculite conscious." It is also pointed out that, having regard to all the licensing formalities, etc., some three years normally elapse from the time that the architect makes up his mind to use vermiculite to the time that the material is actually put on the site. Importers have done their utmost to popularize vermiculite in Britain and their efforts are now showing very encouraging results. Like a snowball the demand keeps on growing, a trend which is particularly satisfactory since vermiculite is not a "dollar" mineral and is one of the few materials in virtually unlimited supply.

Anglo American Corporation Sponsors O.F.S. Exhibition

A very great deal has been written in this country over the past few years regarding the opening up of the Orange Free State goldfield but it is doubtful how far the written word alone has been able to convey a picture of the truly remarkable developments which are taking place around the opening up of the new mines. The Anglo American Corporation of South Africa is, therefore, to be warmly congratulated in sponsoring in the coming week at the Library of the Central Hall, Westminster, an exhibition of photographs depicting the story of the discovery and development of this great new goldfield. Apart from the interest naturally attaching to the development of the mines themselves, of particular interest to many will be the section of the exhibition dealing with the new ideas which are being introduced in the O.F.S. depicting the concept of the permanent settlement of the native mineworker in the area with his family, as distinct from the compound system traditionally employed by the Rand mines. British town planners will also be interested to see a presentation of the working out of the regional planning of what will in due course be a whole new urban area centring on Welkom.

The Diamond Industry in 1949—II

By W. F. FOSHAG and GEORGE SWITZER

We publish below further extracts from the 25th Annual Report on the Diamond Industry for 1949, issued by the publisher's of the *Jeweler's Circular—Keystone*. Compiled in former years by the late Dr. Sydney H. Ball, this task has now been entrusted to Messrs. Foshag & Switzer of the Smithsonian Institution. The abstracts we published last week dealt with the general market position in 1949 and at the same time dealt in greater detail with the production record of the world's principal diamond mining areas during the year. In this issue we have concerned ourselves with those sections of the report reviewing progress in the utilization of industrial diamonds.

Industrial Distributors (1946), Ltd., in Johannesburg, sold 3,446,324 carats of industrials during 1949 valued at £1,934,158. This firm is the industrial diamond sales organization for the De Beers group and corresponds to the Diamond Trading Company, which deals only in gemstones.

The demand for industrial diamonds continued to increase in 1949, more and more industries turning to the product for precise, economical and speedy production. This concerned diamonds for drilling, for dressing and truing of abrasive wheels, for diamond-bonded wheels and for diamond dies, as well as for minor uses. Production of industrial diamonds remained at about the same level. The many regions of Africa that produce industrial diamonds continue to be the source for over 90 per cent of the production of these types of diamonds. The relatively small remainder of industrial diamonds continue to be produced in Brazil, British Guiana and Venezuela.

In general, the consumption of industrial diamond tools and products by American manufacturers in 1949 was commensurate with production in all lines of merchandise. It increased or decreased according to the fluctuations in the manufacture of the various end products. Purchases of diamonds did not increase, even though more uses were found for diamonds for economy or precision in production, and diamonds lost very little, if any, ground to other abrasives in any manufacturing processes.

This does not take into account Government stockpile purchases of this strategic material, upon which no commentary is made here because of international affairs existing at the time this report is written.

Were it not for heavy inventory positions in many manufactured lines in America, and in some cases of large stocks of industrial diamonds in the hands of consumers, it is believed that sales of industrial diamonds would have increased.

Diamond Dressing and Truing Tools.—This field continued to represent the main application of diamond tools containing whole, sound diamonds. Its operations consumed a large part of the total production of sound industrial diamonds.

During the year there have been developments of rather unusual importance in devices for automatically controlling the area of contact between diamond and wheel. Indexing devices by which a new diamond face is presented to the wheel following each dressing has permitted maintenance of correct angles and edges on the diamond. The result has been longer diamond life and improved surface of the wheel which has been dressed.

There has been a greater tendency toward wider use of the multiple stone and impregnated type of dresser. Such types of tools have undergone improved development through the use of improved holding mediums.

There have been wider applications for the use of diamond tools, the scope of which is increasing in proportion to the general increase in grinding practices.

The high productive capacity of the automobile and its related industries, as well as the increased development of mechanical devices, has created increased demands for diamond tools of many varied types.

The economic value and efficiency of diamond tools is becoming more widespread through educational and training programmes in the various industrial activities. A steady continued growth in the use and application of diamond tools can be confidently expected.

Diamond Drilling.—Diamond drilling operations in 1949 in the Western Hemisphere, particularly in the United States, were as broad in scope as at any time in its history. Some slack was experienced in the mining industry due to the lower price of metals, but this gap was amply filled by the United States Geological Survey and Atomic Energy Commission uranium ore exploratory programmes, the highway construction in all parts of the United States, and by the many other Government construction projects. The broad scope of drilling included the specialized fields of blast-hole drilling, grout-hole drilling, bridge and dam construction, foundation test work, strength testing, and building construction test work, in addition to the many phases of mineral exploration.

Coal mine dewatering problems have necessitated the use of diamond bits as large as 16 in. in diameter. In fact, the 8 to 12 in. size mechanically set diamond bits have been widely used in drilling angle holes for dewatering purposes and in the development of cable-ways and air-shafts. These large diamond bits are also used when the vibration and jarring of other types of drilling cannot be tolerated.

Diamond bits have been used to greater depths than ever before in history. In the February, 1950, issue of *Drilling* magazine it was reported that cores were taken from the earth at depths of 20,503 ft. at the Superior Oil Company Pacific Creek No. 1 Well in Wyoming. This is the deepest diamond coring recorded to date. The broader use of diamonds in oil well drilling tools was discussed by D. H. Stormont in the *Oil & Gas Journal* of November 17, 1949.

Several organizations have produced results in their studies of diamond drilling. The American Institute of Mining and Metallurgical Engineers sponsored a paper by W. B. Mather on "Rock Hardness as a Factor in Drilling Problems." This paper, relates the cost of diamond drilling favourably to other types of drilling in various formations. The University of Minnesota sponsored its second drilling symposium in Hibbing, Minnesota, in March, 1950. The need for better core recovery was stressed by Government representatives, college professors and mining operators. The Diamond Core Drill Manufacturers' attempt to standardize equipment, and is co-operating closely with its sister association of Canada. The association recently approved "X" Series fittings used with diamond bits, standard ring and plug gauges for use with reaming shells and core bits. The diamond bit and reaming drill standards were approved in 1947 and 1948 together with three large size core barrel and bit assemblies. It also approved in the latter part of 1948 an "M" Series core barrel, which during 1949 achieved noteworthy success in improved core recovery. The results of some tests with the use of this core barrel have been reported in U.S. Department of the Interior, Bureau of Mines Reports of

Investigation 4628 and 4597, by Albert E. Long. The Industrial Diamond Association of America has worked closely with the U.S. Corps of Engineers in an effort to standardize core bit specifications.

Oilfield Drilling.—During 1949 general improvements made by manufacturers in oil field diamond bit designs, core barrels and drilling techniques have led to longer footages per bit and subsequently lower costs per foot of hole drilled. This has brought about an increase in the use of diamond bits in this branch of industry. However, due to the longer bit life there was little increase in business volume over that of 1948.

There have been cases where the diamond core bit proved to be more economical as an actual drilling means than the conventional rock bit. At the Rangely field, in Colorado, and in one or two other localities, such was the case. But an article in the May, 1950 issue of *World Oil*, entitled "Relative Economics of Diamond Coring and Drilling," by Carroll Deely, sets forth the uses and limitations of the diamond bit in oil field practices. On the average, the petroleum industry is primarily interested in coring prospective zones of productivity. The attendant high core recovery has made the diamond bit an outstanding tool where core is a necessity. After several wells have been spotted and core in any given field the essential information is obtained and the remaining wells are usually drilled by conventional methods.

The larger oil companies are the prime users of diamond coring equipment since the broad scope of their operations allows them to transfer these tools from one field to another as the need dictates. The initial higher cost of oil field diamond bits has caused the smaller operators to hesitate before diamond coring or to hold it to a minimum, since the extent of their operations is limited.

Accessory equipment to the diamond bit such as a core wedge indicator (a device which not only indicates wedged core by a fluid pressure rise at surface, but also sets up a vibration in the core barrel to break loose the blocked core), as an integral part of the core barrel, and the Core Buster (an application of a conventional rock bit within the core barrel behind a diamond core bit which grinds up the core so that a continuous drilling operation may be achieved) have been developed. They are a definite aid to the advance of diamond drilling potentials.

Diamond Wheels.—The accelerated demand for diamond wheels can be accounted for by the expanded use of tungsten carbide, the wide development of ceramics and the successful application of diamond wheels to the grinding of glass. Diamond wheel manufacturers have greatly improved the product and the vitreous, resin and metal bonded wheels now available have reached a high state of efficiency.

In the interest of diamond wheel users, it is important to stress the necessity of conservation in times of national emergency of the critical and strategic bort which it is necessary to reduce to powder for use in making diamond wheels. Many diamond wheels are destroyed because of the conditions under which they are used or misused. During the past year, the Industrial Diamond Association has worked to encourage more economical use through its dissemination of technical papers on the Use and Care of Diamond Wheels.

Wire Drawing Dies.—Only diamond wire drawing dies are used for the drawing of all electric lamp filaments. This branch of the industry, alone, manufactured three billion lamps in the previous year, including lighting and radio tubes. In addition, diamond dies must be used for the production of wires of various types in the fine diameters that are less than .004 in. in diameter. Resistors and the parts for many electronic products, including secret military weapons, depend upon diamond dies for their production. Copper wires for small motors must be drawn through diamonds.

Diamond Powder.—The expanded use of diamond powder can be accounted for by the improvement in the technique of manufacture. The close grading of powder thus attained has permitted broader uses of the material.

Modern American production calls for high and rapid finish of many mechanical products, which is now made practical with closely graded diamond powder. In addition to which there is the normal application of finishing carbide dies, jewel bearings for instruments and watches and for lenses and other glass products. There is no substance which can economically compete with diamond on such applications.

Diamond Compounds.—During this year diamond compounds have made a large step towards reaching maturity. Amongst the significant new uses for this group of product are:

—in the glass industry, the finishing of glass moulds, resulting in accurately shaped products of most attractive appearance.

—in the watch industry, the finishing of dies for watch cases as well as watch jewels and precision parts.

—in the metallographic laboratories, the polishing of metal specimens of great hardness or containing particles varying in hardness.

—in the metalworking industry generally, the finishing of tungsten-carbide tools with substantial increases in productive life resulting from proper high polishing.

Diamond compounds are used now on a truly national scale and also with great success in foreign countries. A steady increase has occurred in the established fields of use such as the finishing of plastic moulds, die casting dies, production-lapping and the manufacture of gauges and precision parts. New accessories have been developed in the form of lapping sticks and lapping plates which permit saving of time and excellent uniformity of results.

Research has been directed towards improved grading of diamond powders and towards new compound-vehicles. The latest national standard for diamond powders is likely to be permanent.

Boring and Turning Tools.—Diamond turning (on a lathe) or boring (on a boring mill or borematic) will produce finishes of one micro-inch. On a diamond-tooled piston turning job surface finishes poorer than three micro-inches constitute cause for rejection of the piece. To anyone who drives a car or enjoys the benefit of precision equipment in his home or factory this means that diamond turned parts fit better, run smoother and last longer. In previous years surface finishes of eight to ten micro-inches and even 15 to 20 micro-inches were considered satisfactory results of diamond tooling. Finishes of one micro-inch with rounder corner faceted diamond tools can be obtained. To-day, manufacturers are rejecting pistons having a micro-inch finish greater than three, in a production set up. During the year an automobile manufacturer resumed diamond turning of piston pin holes. Availablity of better castings made the diamond tooling possible.

Valuable advances were made, particularly in the generating of optical glass, stone and glass sawing processes and portable drilling equipment. Also there was a still wider application of diamond tools to plastics and ceramics manufacture.

British Thomson-Houston's Activities—1950

To deal even briefly with the large number of notable achievements in design, manufacture and research by British Thomson-Houston during 1950 would be an extremely difficult assignment, and the following review of the company's activities during last year is but an outline of some of the many orders which the company carried out in connection with the mining and metallurgical industries.

PROGRESS WITH DYNAMIC BRAKING

For the mining industry much attention was concentrated on the development and improvement of dynamic braking control systems for electric winders with A.C. drives. The scheme now employed by B.T.H. is to use a "volts-per-cycle-regulator" with a magnetic amplifier system and metal rectifiers, thereby eliminating all auxiliary rotating machines from the excitation equipment. The 640 h.p., 3,300 volt winder for Norton Hill Colliery of the National Coal Board, was amongst the first to be completed having this new arrangement.

In a number of cases, existing electric winders are being modernized by adding dynamic braking equipment. One such order is for Messrs. Rand Mines Ltd., where a 450 amp. contactor and amplidyne-controller braking equipment are to be supplied for adding to the existing 1,625 h.p., 2,100 volt installation. Similarly for City Deep Ltd., No. 5 Shaft, a new 1,375 h.p. motor is to be supplied to replace an old American machine and the latest "static" dynamic braking equipment added.

Recent developments on contactors have resulted in a new range of winder high tension reversing and dynamic braking equipments up to 450 amp. and 6,600 volts. The new design embodies contactor units of exceptional performance on severe duties and has been laid out to achieve ease of accessibility for maintenance. Several other aspects of winder technique have been the subjects of investigation and development during the year.

FLAMEPROOF EQUIPMENT FOR TURKEY

Outstanding amongst orders for flameproof equipment in production during the year was the large contract placed with B.T.H. at the end of 1949 by Etibank, Turkey. It includes about 700 flameproof units comprising BP.31 double isolation switchgear, gate-end boxes and hoist equipments; in addition 3,500 flameproof fluorescent fittings are required for roadway lighting. Substantial progress has been made, about half of the total quantities having been completed and shipped.

Representative of the type of order received for electric motors was one for 1,732 15 h.p. squirrel cage induction machines for driving tube well pumps for the Rasul irrigation project in Pakistan; while another included six 150 h.p. special vertical skirt-mounted slip-ring motors driving 8 in. gravel pumps in open-cast mines in Malaya.

With regard to B.T.H. rectifiers, business during the year was well maintained and several noteworthy orders were received: one from Australia called for thirty-two 1,500 kW., 1,500 volt equipments for the Victoria State Railways. These rectifiers are required partly for the electrification of the Gippsland line for the purpose of handling brown-coal traffic to Melbourne and partly for the first stage of a frequency conversion and modernization programme for the extensive Melbourne suburban electrified system.

A number of winder furnace and similar high-voltage contactor equipments have been delivered employing a new type of high-voltage contactor. An interesting application of a high-voltage contactor equipment is an experimental unit made for mining duty. In this equipment a reversing version of a 3.3 kV. contactor has been mounted in a cylindrical flameproof container designed for the maximum pressure obtained under flameproof conditions, and the opportunity has been taken to make the cover, which is circular, of the single bolt fixing type. The complete contactor unit is fitted with the necessary current transformers, earth leakage transformers, protective device, fuses, etc., and is mounted on a chassis so that it may be withdrawn for inspection. The whole control unit is designed for mounting on the front of a standard mining type switchgear unit.

ROLLING MILLS AND AUXILIARIES

The past year has seen the starting-up of a number of important rolling mill drives and the completion in the B.T.H. Works of several others which will go into operation in 1951.

At Northern Aluminium Co's Works at Rogerstone, South Wales, a total of 20,000 h.p. of B.T.H. main roll motors has been installed together with 16,000 kW. of motor-generator sets.

At Messrs. Guest, Keen & Nettlefolds (South Wales) Ltd., the new Morgan Continuous Rod Mill has been put into operation. This is a very high-speed mill, rolling at 5,000 ft. per minute, and consists of 23 stands driven by 17 B.T.H. D.C. motors of various powers from 200 h.p. up to 1,750 h.p. supplied from a synchronous motor-generator set.

The equipment for the Steel Co. of Wales' 80 inch hot strip finishing mill at Abbey Works, Port Talbot, has been despatched and erection is nearing completion. This drive comprises six large D.C. motors totalling 28,000 h.p. supplied from a bank of B.T.H. mercury arc rectifiers of 21,000 kW. capacity.

Work on many other large rolling mill drives is proceeding in the factory or on site.

In connection with auxiliaries and process lines, the plant commissioned this year at the Northern Aluminium Co's Works, Rogerstone, includes a slitting and coiling line running at 1,000 ft. per minute, with amplidyne control of the two coilers and uncoilers to give preset strip tension; and also two flying shear cut-up and classifying lines working at 600 ft. per minute which deliver the cut sheets in counted piles ready for boxing and despatch. The equipment includes D.C. motors up to 75 h.p., motor-generator and amplidyne sets, photo-electric relays, control desks, and approximately 90 ft. of open-type contactor panels.

A considerable number of orders are in hand for other rolling mill auxiliary drives including two 150 h.p. skip hoists complete with motor-generator sets, and auxiliary motors for blast furnaces in Australia.

EXCAVATOR CONTROL

In connection with excavator and crane control equipment, B.T.H. has been entrusted with the design of the machinery and control equipment of the largest walking dragline in the world. This equipment comprises the complete control unit for the 330 volt, 3,000 h.p. motors used for this equipment, and the entire control is centralized in two operating cabins.

Furnace transformers for export have also figured prominently and orders have included 6,500 kVA., and 5,000 kVA., 11,000/136 volt, 3-phase units for Rhodesian Alloys Ltd., and a repeat order from Metal-ectric Furnaces Ltd., Birmingham, for a 7,500 kVA., 11,750/220 volt, 3-phase unit for use in Holland.

Machinery & Equipment

The Hunslet Engine Company, 1950

The year 1950 was one of outstanding interest at the Leeds works of the Hunslet Engine Co. Ltd., both technically and in the order and delivery books. Steam and diesel locomotives both were built in quantities and the works maintained at full pressure throughout the year. Deliveries and orders in hand covered Great Britain (which included many of the 48-ton "Austerity" six-coupled tanks for the National Coal Board), Australia, South Africa, Rhodesia, Mauritius, Tanganyika, Sudan, Gold Coast, Cameroons, Ashanti, India, Nepal, Ceylon, Borneo, Canada, Algeria, Portuguese West Africa, and Peru.

Mines locomotive deliveries of the 65, 70 and 100 h.p. types were continued to the N.C.B., including two of a special narrow-width 100 h.p. model, now the narrowest pit six-wheeler in the country. In addition, flameproof mines diesel locomotives were delivered also to Australia, South Africa, West Africa and Canada; and mines types were on view at the B.I.F. and the Toronto Fair. A new 45 h.p. mines-type model was initiated during the year, and in the light surface class a new high-quality range extending from 21 to 66 h.p. was introduced, and shown for the first time at the Public Works Exhibition.

Surface diesel locomotives were delivered to a dozen countries, the 31-ton standard 204 h.p. type finding a market not only in South Africa, Algeria and Peru, with repeat orders for Tanganyika, but also to an increasing extent among the steelworks and heavy industries of this country. Moreover, two 300 h.p. 40-ton four-wheel steelworks straight diesel locomotives, the largest of their type in Great Britain, were set to work in Co. Durham, and are being followed by others of the same output for this country and Rhodesia.

Just at the end of the year was completed the first of four 500 h.p. locomotives, the largest straight diesel locomotives in the world. Three are to be shipped to South America, and the fourth is for service in this country. All have Hunslet's own form of gear drive.

Hunting Aerosurveys Awarded Siam Contract

The mapping of some 15,000 sq. km. in Central Siam, in addition to the surveying of a vast area to ascertain the most suitable location for the laying down of a railway to relieve traffic through Korat, forms the first stage of a general resources survey of Siam for Mining, Forestry and Agricultural development. The Siamese Government have already allocated some £285,000 towards this development scheme and to perform this important task it has awarded a contract, put out to international tender, to Hunting Aerosurveys, Ltd.

The type of aircraft which Hunting Aerosurveys are using for this work is the Percival Survey Prince. It is specially designed for aerial photography, with a transparent nose and has the latest Smith's S.E.P.I. (automatic pilot) guided by a Hughes G.3 Gyro Magnetic Compass enabling the aircraft to maintain a fixed course within exacting limits. Two Williamson Eagle IX electrically controlled survey cameras are being carried. The Percival Prince carries the distinction of being the first of its class to comply with I.C.A.O. transport category 'A' standards of airworthiness, and other similar type aircraft are already operating in South-East Asia.

The Company's aircraft with all the necessary equipment left this country for Bangkok within seven days of the company being notified that they had been awarded the contract.

New Manganese Ore Refining Process

An economical method of refining domestic manganese ore which, if properly exploited, might make America independent of foreign sources for more than 100 years, was described to the American Chemical Society's North Jersey Section this week by Dr. E. S. Nossen, Director of Research of E. S. Nossen Laboratories, Inc., Paterson.

According to a Reuter's message from Newark, N.J., the process involves converting manganese ores to manganese monoxide and then dissolving the material in nitric acid. The nitric acid cycle, which was developed at the Nossen Laboratories, permits the acid to be recovered and re-used, thus making economic operation possible, said Dr. Nossen. Discussing the disadvantages of the various methods by which manganese ores are now processed, he told how the nitric acid method avoids their limitations.

The process is applicable to both oxide and carbonate ores, the two kinds most prevalent in this country, he said, adding that it appeared to be very advantageous in ores with a high iron content such as those of the Cujuna range in Minnesota, because a large amount of the iron is recovered.

"What with other processes was an expensive nuisance turns out to help the economy of this process by lowering the cost for the manganese," Dr. Nossen asserted. "The major steps of the process are very simple ones and do not require any complicated or unusual operating conditions such as high pressures and high temperatures. Gas reactions, usually leading to remarkable losses of valuable reagents and making the reaction steps interdependent, are avoided. The necessary equipment consists of standard equipment as used in mining, metallurgical and chemical operations."

Two New Bulletins from Marion

The Marion Power Shovel Co. of Marion, Ohio, have announced the publication of Bulletins Nos. 401 and 402.

Bulletin No. 401 outlines the design and operating features of the Marion Type 93-M Ward-Leonard electric machine, which is built for heavy duty service on long-term jobs in coal mining, metal mining and quarrying industries.

Bulletin No. 402, which is a two-colour 12-page booklet, gives a complete design and performance story on the 111-M. This machine, equipped with diesel power, electric swing and Marion air control, is available for service as a shovel, dragline, clam shell, crane or long-range shovel. It carries a 4 cu. yd. dipper as a standard shovel, and a 3½ cu. yd. dipper as a long-range shovel. The dragline bucket capacity varies from 3 to 5 cu. yd., depending on the length of the boom. It is designed for service in the coal-stripping, quarrying and mining industries.

Copies of these Bulletins can be secured from John Blackwood Hodge & Co., Ltd., 11, Berkeley Street, London, W.1, who are the sole distributors in the United Kingdom for the Marion Power Shovel Co., Ohio.

Fire Extinguisher

A new pressurized extinguisher designed to smother fires in metals, has been developed by the Ansul Chemical Company, Marinette, Wisconsin, U.S., reports Reuter. It expels a new dry powder, known as Met-L-K, and it is claimed to be effective against fires in magnesium, sodium, potassium, zinc, powdered aluminium and other metals. The U.S. Government has placed the extinguisher on the Defence Order allocation for industrial uses.

Metals, Minerals and Alloys

Intense activity continues in administrative and representative metal circles in the United States of which at present only the general trend is discernible. To appreciate the position in which the metals and metal users stand to-day, we should envisage it as a vital phase of international industrial mobilization, in which normal features of price, supply and demand are giving way to integrated Government controls. The pattern of the regulations now being incubated in the United States seems to differ little from that eventually established in the last World War, and which must be imitated or accepted in this country and elsewhere. We have pointed out for weeks past that prices were becoming less and less a determining feature of the situation, and the possibility of obtaining supplies and subsequently control of uses, have been tending to become the dominant considerations. A world war does not exist, but industrial mobilization on an unprecedented scale is proceeding. In the United States, legislation will be requisite for price and wage controls and President Truman has stated that these will be made effective as soon as it is physically possible. Meanwhile, no ceilings for copper, lead and zinc were recommended during last week's meetings of the producers with the Economic Stabilization Agency.

The United States Defence Minerals Administrator has stated that all known copper deposits in the parts of the world open to the United States would not meet the country's estimated defence and civilian requirements. He said that the United States copper producers had been under pressure to expand existing facilities for the last year or so and they had done about all that they could. However, the Government knew of additional domestic ore deposits which in five to eight years could produce about 250,000 s.tons of copper annually, though not all this output would be in addition to the United States present annual production of about 900,000 s.tons. Some of the deposits being worked now were being depleted or getting into lower grade ore so that the net increase would be less than the additional deposits would produce. It normally took five to ten years to develop a copper deposit. More than 250 civilian uses of copper had already been limited or banned by the American Government from March 1. The Administrator also said that zinc, which is also in terribly short supply, had been responding with increased production to price increases. It would probably be necessary for the Government to assist in the expanson of that industry on a small scale. The Goverment was also trying to find ways of encouraging the production of quartz crystal, mica and beryl in such sources as India and Brazil.

The Ministry of Supply announced that its prices for copper, lead and zinc would be those ruling on the next working day after the consumer's order was posted, and not those on the day when the order was given. Consumers have already to pay substantial premiums on forward purchases and on a number of special shapes, etc.

Mr. C. D. Howe, Canadian Trade Commissioner, has stated that his Government is planning controls for non-ferrous metals, more particularly copper and nickel.

Copper.—Generally speaking, U.S. trading in non-ferrous metals has slackened in the last two weeks. As noted above, the official price for copper has been stable for a considerable time past, and no ceiling is at present contemplated.

Potentially, the most important news with regard to copper this week is the threatened strike by the African Mineworkers' Union in Northern Rhodesia, following the breakdown of conciliation talks. Out of some 36,000 Africans employed in the mines over 20,000 are said to be members of the Union. The Union delegates asked the companies to grant its members the same bonus scheme as already exists for the European employees. This bonus, effective when the price of copper reached £200 a ton, would, it is said, equal 50 per cent of their present native pay. This demand the companies refused, but were prepared to improve conditions to the extent of an increase of £7 per year per miner. This offer was refused by the Union, and the Government on the joint request of both sides, sent the Commissioner for Labour and Mines to act as a conciliator, but it is now stated in Lusaka that his attempts at a settlement failed and the Union is balloting its members as to a strike. How far the Mineworkers' Union may have been encouraged in their attitude by Communist inspiration, it is impossible to say, but obviously this is a good psychological time to press demands for similar treatment for white and black workers, and is the natural outcome of the British Labour Government's inculcation of Trade Union organization and principles.

Bills to renew the suspension of the 2c. import duty into the U.S. will be introduced in Congress at an early date. Mr. James T. Patterson, who is introducing one Bill in the House of Representatives, proposes the suspension of the tax from April 1 until the termination of the national emergency. He is reported as saying that the military stockpiling of copper is inadequate to assure even a continuing production of weapons and other war materials. Copper sales in December are reported in excess of 108,000 s.tons, with January sales reported last week as 77,544 s.tons, while 9,708 s.tons had already been booked for February.

It is reported that the Defence Minerals Administration will approve the White Pine Mine project involving a Government loan of up to $100,000,000. This scheme was referred to in our issue of Dec. 15 last. This lode is reputed the largest known undeveloped deposit in North America, with a potential output in two years' time of 75,000 s.tons.

The East India Co. Inc., a subsidiary of the Felix Kramarsky Corporation, proposes to start shipping small quantities of high-grade ore about July 1 next from the Grand Rivière du Nord in Haiti. The ore is exceptionally high grade and sufficient ore reserves are said to have been indicated to promise well for the future. The territory is entirely unexplored and future prospecting on a very large scale is planned. About 10,000 s.tons of +20 per cent ore is said to be already available for development and mining. Shipments of 250 tons of ore per month are expected initially, rising to about 500 tons later.

Representatives of the General Services Administration are reported to have arrived at Belgrade with a view of acquiring Yugoslav copper and other metals for the U.S. strategic stockpile.

Lead.—Producers opened their January books for lead at the unchanged domestic price of 17c. per lb., but customs smelters are charging consumers with the increased import duty of 1½c. for foreign lead. European demand for Mexican lead is reported very brisk, with prices 18.50/18.75c. f.a.s. Gulf ports. In the course of the discussions between the zinc industry leaders and the representatives of the E.S.A., it was stated that there were no longer any surplus stocks of lead available.

The Ministry of Supply is reported to be anxious to see the re-opening of abandoned zinc-lead mines in Great Britain, more particularly in Derbyshire, the Mendips

and North Wales. Production at the Trecastell lead mines in the summer is forecast.

Tin.—Tin has been firm with the "back" tending to decline. The U.S. price on Wednesday was 170.00c. per lb. The London and Eastern price appears below. Increasing arrivals of Straits tin in this country had increased the stocks of metal in Metal Exchange warehouses to 9,182 tons at the end of last week. Straits shipments in December were 5,557 tons (compared with 7,543 tons in November), of which Europe took 1,970 tons, the U.S.A. 1,677 tons, other countries 714 tons, the U.K. 614 tons, and British possessions 582 tons. Total shipments for 1950 amounted to 81,855 against a Malayan production of some 58,000 tons.

Production from the Longhorn Smelter in December was 3,005 tons, making the total for the year 32,136 tons, as against 36,052 tons in 1949, and compares with the quota assigned to Bolivia under the old Tin Restriction scheme of 46,000 odd tons.

Zinc.—A very important step was reported from New York on Tuesday when it was announced that the United States had decided to suspend stockpile purchases of zinc for the next six months, though unfilled contracts entered into last year will still have to be completed. Suspension of stockpiling in the case of copper as well as zinc has been increasingly urged by metal interests. In the case of zinc U.S. should be well able to suspend, as the stockpile is estimated at around 600,000 s.tons. It is even hoped that with the cutback in civilian uses, a surplus may be established by the middle of the year. Deliveries into stockpile last year are reported to have averaged 10,688 s.tons a month.

The official price in the U.S. is still 17.50c. per lb. but with the Government still requiring the completion of 1950 deliveries into stockpile, the position remains very tight. Limited sales of Mexican Prime Western have been done at 25c. f.a.s. Gulf port. Mr. Howard I. Young, of the American Zinc, Lead and Smelting Co., has stressed the difficulty of obtaining sufficient foreign concentrates to enable domestic smelters to operate at capacity in the coming year. The difficulty is primarily due to the differential between the domestic price and foreign prices, which have ranged between 21c. and 23c. He estimated the production of slab zinc for the coming year, barring strikes, at 930,000-950,000 s.tons, assuming the necessary concentrates are available. The recoverable zinc from domestic ores (not including the requirements of the pigment industry), he put at 500,000-550,000 s.tons, leaving foreign concentrates to yield 380,000-450,000 s.tons of metal. The seriousness of the position is further illustrated by the fact that stocks of zinc which were 94,000 s.tons at the beginning of the year had been reduced to 8,962 s.tons at the end.

Aluminium.—Almost the only important metal which looks to increase its output and uses largely in the coming year is aluminium. The American output last year is put at approximately 717,500 s.tons, an increase on the year of about 19 per cent, and the highest figure ever attained, with the exception of the war years 1943 and 1944. Mr. Reynolds forecasts an output of over 800,000 s.tons in the coming year. Alcoa, in a New Year's statement, lists an imposing range of uses in military and aviation applications. President Truman has called for a great increase in the capacity for the production of military planes up to a yearly rate of 50,000, and 35,000 tanks, to say nothing of landing mats, bridges, radar and fire control towers, helmets, shelters, pipe for fuel lines and a multitude of other military accessories. Expansions in capacity already arranged should give Alcoa, Reynolds and Kaisers an increased output of some 50 per cent or, say, 1,100,000 s.tons by 1952. The Norwegian output this year is estimated to have increased nearly 10,000 tonnes to around 44,000 tonnes. Exports in the first ten months were 35,000 tonnes. It is interesting to note that the Norwegians are employing more aluminium for canning, and for the manufacture of electric cables as well as in shipbuilding.

Quicksilver.—There was a further advance in quicksilver prices at the beginning of the week, with American importers asking $185 and over per flask. This increase followed a further advance in Spanish quotations to an f.o.b. level of $160 and Almadén is said to be endeavouring to further raise the f.o.b. price to $200. The Italian price is also higher, the home price now being L.70,000 per flask, but supplies are said to be very limited; exports are subject to licence. With the big Italian sales towards the end of 1949, Spain has now probably almost a monopoly of all supply, though efforts are being made to reactivate the Californian mines, which gradually closed down as the price fell. However, with Spain's great need of American financial and material assistance, the possibilities of a bargain should exist, to prevent any further advance in the Spanish asked price.

Sulphur.—Licences have now been issued by the Board of Trade under the Control of Sulphuric Acid Order and the Control of Sulphur Order, effective from Monday last. General consumers of crude, recovered or processed sulphur and of acid produced from crude sulphur are restricted to two-thirds of their takings for the basic period. Consumers of acid derived from materials other than sulphur are not so far materially affected. U.K. production of sulphuric acid according to the Monthly Digest of Statistics last October (the latest figures available) was 145,100 tons and consumption 151,000 tons. The *E. and M. J.*, October issue, stated that E.C.A. Counterpart funds available for Italy will be used primarily to help the Sicilian sulphur industry, much of it being devoted to prospecting for new deposits.

Tungsten.—The demand for wolfram ores continues to exceed supply and something like a grey market rules. Yesterday dealers were giving prices varying from 430s. per unit to 460s.—any quotations are actually on a day-to-day basis. The U.S. Government price last week was $58/60 per s.t. unit.

Gold.—The Transvaal output for December was 936,306 f.oz., one of the lowest monthly returns for the year. Total for the whole year was 11,659,280 f.oz. compared with 11,708,013 f.oz. in 1949. The lower return was largely due to milling lower grade ore, but owing to devaluation at the end of 1949 the value was a record at £144,710,814. The Chancellor of the Exchequer stated on Wednesday that the gold and dollar reserves of the sterling area rose to $3,300,000,000 as compared with $1,688,000,000 at the end of 1949. South Africa's gold and foreign exchange holdings have been increased four times between the institution of full import control and the end of last year.

Silver.—The price of foreign silver has been sharply advanced in New York this week to 90.16 c., so that foreign silver is now on a price parity with domestic mined silver. In London the price has been raised to 78½d.

The London Metal Market

(From Our Metal Exchange Correspondent)

Thanks to the continued selling in the open market of fairly substantial quantities of cash tin, the backwardation has disappeared at the time of writing, but it may well be that it will be replaced by a contango by the time this article is in print. It would be rash, however, to assume that this is anything but a temporary phase, and the continuance of this state of affairs is dependent

on the availability to the market of ample supplies of prompt material. Stocks in official Metal Exchange warehouses increased substantially last week.

The demand in the Singapore market has been good and prices have advanced daily, whilst business with the European continent has been brisk. In America business has been quiet owing to fears of the Government taking over complete control, but a demand for prompt metal seems to be developing.

Shipments from Malaya in December were lower than in November, those from Singapore being 1,735 tons compared with 3,610 tons, and from Penang 3,616 tons compared with 4,494 tons. Shipments include 1,677 tons to the U.S., 671 tons to South America, 588 tons to the U.K., and 2,532 tons to Europe.

On Thursday the official close on the tin market was:—Settlement price £1,275, Cash buyers £1,275, Sellers £1,280; Three months' buyers £1,265 Sellers £1,270. In the afternoon the market was easier. Turnover for the day was 310 tons. Approximate turnover for the week was 1,200 tons.

The Eastern price on Thursday morning was equivalent to £1,332 17s. 6d. per ton c.i.f. Europe.

Iron and Steel

It is already manifest that the continued expansion of steel production during the current year, is largely dependent upon the provision of increased tonnages of iron and steel scrap from home sources. During recent months there has been a marked shrinkage in the arrivals of German scrap. A few cargoes have been obtained from other sources but in the main, it appears that steel makers will have to rely on British industries for the bulk of their scrap supplies.

At least 4,000,000 tons a year are required from home sources, according to a statement by the B.I.S.F. At some of the steel works the need is already very urgent. In November last, total stocks of iron and steel scrap at the steel works and foundries fell to 685,000 tons, the lowest level since June, 1949, and have probably declined still further since that date.

The fuel crisis provides another headache for the steel makers. In no other industry is there greater concentration upon the problem of fuel economy and spectacular results have been achieved. But the iron and steel industry still ranks as one of the biggest consumers of coal and increased steel production cannot be achieved on rationed supplies.

On the North-East Coast a new battery of 22 coke ovens came into operation for the first time a week ago. This will make a material contribution to the output of blast furnace coke and opens up the prospect of the expansion of pig iron production. Such a development is certainly needed as the current output falls substantially short of requirements.

In the re-rolling industry similar difficulties are experienced owing to the scarcity of billets. Imported material is very costly and to a greater extent than ever consumers have to rely on home sources for their supplies.

All the finishing mills are running to full capacity and bookings are already so heavy that works are disinclined to add to their commitments at present. Restrictions on the acceptance of export orders are now more generally practised.

Tinplate.—The acute shortage of scrap is a major problem of the steel industry in South Wales, and with the reductions in continental scrap imports, the outlook is even deteriorating. Many users are unable to place orders for steel sheets, because of the reluctance of sheetmakers to increase their committments, in view of their raw material difficulties.

Coal

There is probably no period when changes in productivity in the coal mining industry are more violent than at the end of the year. At the output peak in the week ending December 16, absenteeism averaged only 8.64 per cent overall, and the O.M.S. at the coal face reached 3.15 tons. For the week ending January 6, this year, the corresponding rates were: overall absenteeism 20.24 per cent; and the O.M.S. 3.05 tons. The prospects of the Government plan for the production of an extra 3,000,000 tons more in the four months ending April, will be very unpromising, if the returns issued this week by the Ministry for the seven days ending Jan. 6 are any criterion of future output trends. In themselves they must threaten any such plan, for they are in large measure due to the observance of the seasonable holiday in Scotland on New Year's Day. This fact alone accounts for the loss of 469,000 tons; but the phenomenal rise in the absenteeism rate in the industry as a whole from 8.64 to 20.24 suggests widespread non-attendance for the first Saturday morning shift in the year.

The downward trend of the labour curve has apparently been arrested, and the totals of 688,600 overall, and of 285,100 at the coal face, with which the New Year opened, were the best recorded by the Ministry since the beginning of December.

JANUARY 11 PRICES

COPPER

Electrolytic	£202 0 0 d/d

TIN

(See Metal Notes above for Thursday's Metal Exchange prices)

LEAD

Soft foreign, duty paid	£136 0 0 d/d
Soft empire, including secondary lead ...	£136 0 0 d/d
English lead	£137 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid ...	£151 0 0 d/d
G.O.B. spelter, domestic	£151 0 0 d/d
Electrolytic and refined zinc	£155 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£250 per ton
Crude, 10 cwt. and over ...	£195 per ton

NICKEL

99.5% (home trade) ... £406 per ton

OTHER METALS

Aluminium, £124 per ton.
Bismuth, 17s. lb.
Cadmium, 17s. 3d./18s. lb.
Chromium, 5s. 3d. lb.
Cobalt, 15s. 6d. lb.
Gold, 248s. f.oz.
Iridium, £55 oz. nom.
Magnesium, 1s. 6d. - 2s. lb. according to quantity.
Osmiridium, £30 oz. nom.
Osmium, £70 oz. nom.
Palladium, £8 10s. oz.
Palladium (scrap), £7 10s. oz.
Platinum, £27/33 5s. nom.
Platinum (scrap), £26 nom.
Rhodium, £45 oz.
Ruthenium, £25 oz.
Quicksilver, £58.10s./£59 nom. ex-warehouse.
Selenium, 25s. nom. per lb.
Silver (bar), 70d. f.oz. spot and forward.
Tellurium, 14s. 4d. lb.

ORES, ALLOYS, ETC.

Bismuth	30% 5s. 10d. per lb. c.i.f. 20% 3s. 6d.
Chrome Ore	Nom.
Magnesite, ground calcined ...	£25 - £26 d/d
Magnesite, Raw	£9 - £10 d/d
Manganese, Best Indian ...	(Nominal)
Molybdenite (85% basis) ...	(Nominal)
Wolfram (65%), U.K. ..	430s. 460s.
U.S. ...	$58/$60
Tungsten Metal Powder (for steel manufacture) ...	27s. 6d. nom. per lb. (home)
Ferro-tungsten	25s. 6d. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 18s. 9d. per ton
Ferro-manganese, home ...	£30 5s. 11d. per ton
Ferro-manganese, export ...	Nom.
Brass Wire	2s. 2½d.
Brass Tubes, solid drawn ...	1s. 9½d.

The Mining Markets

(By Our Stock Exchange Correspondent)

Last week this column made the point that the increased interim dividend announced by Shell Transport & Trading would have effects reaching far beyond the immediate surroundings of the oil market: This forecast has proved correct. London markets this week have been more active than at any stage during the past year. On Monday the number of bargains recorded reached 11,817, the highest figure since that of 12,128 on September 21, 1949. Mining issues have enjoyed their share of this increased activity.

Coppers have continued their upward movement. This received a check towards the end of the period on news of the African mineworkers strike ballot in the Northern Rhodesia belt over the question of bonus payments. There were two outstanding features in this section. Selection Trust jumped on further consideration by investors of the implications of the recently declared 10 per cent interim dividend, the first in the history of the company. Rio Tinto advanced over £2 per share on the announcement of a resumption of diplomatic relations between this country and Spain.

South African gold mining shares have at last shaken themselves out of the moribund state in which they have remained for so long. Good all round gains have been recorded. Continental buying has been reported. This has undoubtedly been encouraged by the rising price of gold on the free markets of the world. This ranges from the equivalent of £20 per f.oz. in Hong Kong to $44.50 and $46.50 in Switzerland and France. Reports from Johannesburg indicate that the United States, formerly almost the only buyers of gold in the world, are now exporting it at an increasing rate. If this is so it should create a healthier atmosphere for the whole gold mining industry. It remains to be seen how much gold can be sold by South Africa at prevailing free market rates.

Orange Free State issues have turned the corner with the rest, and record good gains all round. The St. Helena development figures for the last quarter of 1950, have undoubtedly heartened this section. This mine, which will probably be the first to start production in the Orange Free State, announced the sampling of 1,690 ft. on the Basal reef. Sixty-five per cent of this proved payable with an average of 15.7 dwt. over a width of 24 in., or 377 in.-dwt. In addition, 3,397 ft. of station cutting was completed during the quarter. These figures can be considered as highly satisfactory.

West Africans have also improved, with Ashantis leading the way. Underground developments in this mine continue to be good, and working profit for the three months ending December 31, 1950 is given as £270,579. Bremang Gold Dredging have announced the completion of their deal with the Gold Coast Selection Trust for the acquisition of further alluvial areas on the Offin and Jimi rivers. The consideration payable will be satisfied by an allotment of new Bremang shares to G.C.S.T. and the payment of a 4 per cent royalty on the gross value of gold recovered. The Directors are asking shareholders to authorize an increase of capital for this purpose. It is estimated that Bremang's No. 2 dredge will have finished its present task in about a year's time. It will then be transferred to the new area and other dredges will follow in due course.

Diamond shares rose again on the annual sales figures announced by De Beers. Gem stones sold exceeded £38.3 million in value, and an interesting feature was the big increase in sales of industrial stones at £12.6 million. This brings total sales up to the huge figure of £50.9 million.

	Price Jan. 10	+ or − on week
FINANCE		
African & European	53/1½	+1/10½
Anglo American Corpn.	7⅞	+⅛
Anglo-French	24/4½	+1/3
Anglo Transvaal Consol	36/3	+3/9
Camp Bird	15/7½	+10½d
Central Mining (£1 shrs.)	45/7½	+1/10½
Consolidated Goldfields	2⅛	+⅛
Consol. Mines Selection	33/9	+3/1½
East Rand Consols	4/6	+1½d
General Mining	6	+⅛
H.E. Prop	38/9	+1/3
Henderson's Transvaal	10/-	
Johnnies	3⅛	+⅛
Rand Mines	7⅛	+⅛
Rand Selection	36/10½	+7½d
Union Corporation	11½	+⅛
Vereeniging Estates	5¼	+⅛
Wits.	30/-	+2/6
West Wits.	2⅛	+⅛
RAND GOLD		
Blyvoors	50/-	+1/3
Brakpan	20/6	−3d
City Deep	3⅛	−⅛
Consol. Main Reef	2⅛	−⅛
Crown	4⅛	−⅛
Daggas	3⅛	+⅛
Dominion Reefs	1/9	
Doornfontein	27/6	+1/9
Durban Deep	3¼	−⅛
E. Daggas	28/9	+7½d
E. Geduld ... (4/- units)	2½xd	
E. Rand Props.	3⅛	+⅛
Geduld	7⅞xd	
Grootvlei	38/1½xd	+7½d
Libanon	17/9	+6d
Luipaards Vlei	21/6	
Marievale	21/6xd	+6d
Modderfontein B	5/6	+3d
Modderfontein East	2⅞	−¼
New Kleinfontein	30/-	
New Pioneer	21/6	+1/6
Randfontein	19/9	+1/3
Robinson Deep	16/10½	−1½d
Rose Deep	32/6	−1/3
Simmer & Jack	7/1½	+4½d
Springs	10/6	+6d
Sub Nigel	4⅛	−⅛
Van Dyk	16/3	−3d
Venterspost	29/4½	+1/10½
Vlakfontein	22/6	+6d
Vogelstruisbult	26/-	+1/6
West Driefontein	4⅜	+⅛
W. Rand Consolidated	42/6	+7½d
Western Reefs	36/3	
O.F.S.		
Alpha F.S.A.	13/9	+1/3
Blinkpoort	21/3	+1/3
Central Mining F.S.	5/3	+9d
Freddies	16/-	+1/3
Freddies N.	9/-	+1/-
Freddies S.	9/3	+1/-
F.S. Geduld	2⅜	+⅛
Geoffries	19/3	+3/3
Harmony	15/9	+2/-
Lydenburg Estates	11/3	+1/3
Middle Wits.	21/9	+4/-
Ofsits	45/-	+3/1½
President Brand	21/10½	+1/3
President Steyn	17/6	+1/6
St. Helena	35/-	+3/9
U.F.S.C. & G.	11/6	+1/-
Virginia Deb.	6/-	−2/6
Virginia Ord.	11/6	+2/6
Welkom	43/9	+3/9
Western Holdings	2⅜	+⅛
WEST AFRICAN GOLD		
Amalgamated Banket	2/3	+3d
Ariston	7/9	+4½d
Ashanti	33/6	+2/3
Bibiani	13/-	+9d
Bremang	3/7½	+1½d
G.C. Main Reef	4/-	+3d
G.C. Selection Trust	10/6	+1/-
Konongo	2/4½	
Kwahu	4/3	+3d
London & African Mng.	1/3	+1½d
Lyndhurst Deep	1/3	+1½d
Marlin	2/4½	+1½d
Nanwa	1/-	
Taquah & Abosso	9/6	+9d
AUSTRALIAN GOLD		
Boulder Perseverance	5/6	+3d
Gold Mines of Kalgoorlie	16/3	+9d
Great Boulder Prop.	7/10½	+4½d
Great Western Consol.	2/-	
Lake View and Star	22/3	+9d
Mount Morgan	23/3	+2/6
North Kalgurli	19/6	+6d
Paringa	1/6	+1½d
Sons of Gwalia	13/6	
South Kalgurli	9/6	
Western Mining	7/10½	+4½d
Wiluna	11/7½	+1½d
MISCELLANEOUS GOLD		
Cam and Motor	31/9	−3d
Champion Reef	9/6	
Falcon Mines	8/6	+6d
Globe & Phoenix	22/6	+6d
MISCELLANEOUS GOLD (contd		
G.F. Rhodesian	8/9	
London & Rhodesian	5/7½	+10½d
Motapa	4/-	
Mysore	6/-	
New Guinea	1/-	
Nundydroog	7/6	+3d
Ooregum	3/-	−1½d
Oroville	12/6	+1½d
St. John d'El Rey	22/6	
Zams	35/-	+1/3
DIAMONDS		
Anglo American Inv.	3⅜	+⅛
Casts	35/3	+2/6
Cons. Diam. of S.W.A.	3½xd	+⅛
De Beers Defd. Bearer	54/6	+1/9
De Beers Pfd. Bearer	17½xd	−⅛
COPPER		
Chartered	68/7½	+1/4½
Indian Copper	5/-	
Messina	98/3	+3/3
Nchanga	6⅝	
Rhod. Anglo-American	55/3	+2/6
Rhodesian Selection	38/1½	+2/4½
Rhokana	20⅛	+⅛
Rio Tinto	24½	+2⅜
Roan Antelope	20/-	+1/10½
Selection Trust	45/-	+4/9
Tanks	43/7½	+1/10½
Tharsis Sulphur Br.	50/-	+2/6
TIN (Eastern)		
Anglo-Burma	4/9	
Ayer Hitam	20/-xd	+7½d
Bangrin	21/3xd	+2/6
Gopeng	10/9	
Hongkong	10/4½	−3d
Ipoh	29/4½	+7½d
Kamunting	9/-	
Kepong Dredging	12/1½xd	+7½d
Kinta Tin Mines	14/-xd	+3d
Kramat Pulai	4/6	
Malayan Dredging	20/9xd	+9d
Pahang	11/3	+9d
Pengkalen	8/-	
Petaling	11/-	+10½d
Rambutan	16/10xd	
Siamese Tin	15/-xd	+1/-
Southern Kinta	11/3	+10½d
S. Malayan	23/6xd	+1/-
S. Tronoh	20/6xd	+1/-
Sungei Kinta	14/4½	
Tekka Taiping	9/3	−1½d
Tronoh	25/6xd	+1/-
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	12/4½xd	+1/-
Beralt Tin	21/7½	+1/10½
Bisichi	3/7½	+1½d
British Tin Inv.	17/6	+1/9
Ex-Lands Nigeria	7/4½	+3d
Geevor Tin	15/-	+6d
Gold & Base Metal	3/6	+1½d
Jantar Nigeria	5/4½	+6d
Jos Tin Area	11/-xd	−3d
Kaduna Prospectors	5/6	
Kaduna Syndicate	11/3	+10½d
London Tin	4/9	+1½d
Ribon Valley	1/1½	+1½d
United Tin	1/7½	
SILVER, LEAD, ZINC		
Broken Hill South	53/3	+3/3
Burma Corporation	4/3	+6d
Consol. Zinc	32/9	+9d
Lake George	25/6	−9d
Mining Trust	5/-	+4½d
Mount Isa	37/6	+1/3
New Broken Hill	33/9	+3/9
North Broken Hill	75/-	+2/6
Rhodesian Broken Hill	20/-	+10½d
San Francisco Mines	70/6	+6/9
Trepca	3/9	+4½d
MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	2⅛	+⅛
Associated Manganese	74/6	−9d
Chinese Engineering	2/6	
C. P. Manganese	49/6	
Natal Navigation	5/-	−¼
Wankie	23/-	+4½d
Witbank Colliery	4½	
CANADIAN MINES		
Dome	$28xd	+3
Hudson Bay Mining	$107	+2
International Nickel	$73½	+3⅜
Mining Corpn. of Canada	£6⅜	+⅛
Noranda	$142	+6
Quemont	£9⅛	+⅜
OIL		
Anglo-Iranian	5⅛	−⅛
Apex	45/-xd	+4/4½
Attock	25/7½	+1/10½
Burmah	53/9	−1/3
Canadian Eagle Bearer	31/9	+1/-
Mexican Eagle	19/7½xd	+6d
Shell	3⅜	+⅛
Trinidad Leasehold	24/3	+1/9
T.P.D.	26/-	+1/-
Ultramar	28/3	+5/4½

Company News & Views

A Record Year for Diamonds

The figures published by De Beers Consolidated Mines this week showing the value of the 1950 sales by the Central Selling Organization which controls well over 90 per cent of the world's business, are arresting, illustrating as they do the inflationary price-progress which is so marked in all the products of the mineral kingdom. With a sales value of £50,967,041, the total was an easy record over any previous year, and was some £12,000,000 better than the previous best in 1948 when sales totalled £38,058,843. 1949 was somewhat of an off-year, when sales were about 70 per cent of the value of those of 1948 and totalled £28,444,186. How much of last year's global increase in price was due to a rise in the value per carat sold we shall not know until the total carats disposed of become available, but the number was probably considerably increased. As it has been the policy of Industrial Distributors, Ltd. to maintain prices in the industrial field as steady as possible, and there was an increase in the value of these sales of approximately 50 per cent, a substantial increase in the sales of gemstones is a fair inference, though, of course, if there were increased purchases for hoarding, larger carat stones of higher caratage value may have been partly responsible for the greater values realized. The following table shows the values both for gem and industrial stones sold since the end of the war in millions of £s:

	Gems	Industrials	Total
1946	26.1	3.5	29.6
1947	20.1	4.4	24.5
1948	26.8	11.3	38.1
1949	19.9	8.5	28.4
1950	38.3	12.6	50.9

Sales of industrial stones increased steadily quarter by quarter in the first nine months of the year, but in the last quarter they more than doubled, which seems to point to large buying for stockpile requirements. The figures for 1950 read as follows:

	Gems	Industrials
March quarter	£10,486,078	£2,114,107
June quarter	£ 6,744,765	£2,471,333
Sept. quarter	£10,758,265	£2,528,428
Dec. quarter	£10,368,590	£5,495,475
Total	£38,357,698	£12,609,343

The fact that the Central Selling Organization was in a position to meet this immensely increased demand, which previous to the Korean war could hardly have been foreseen, still less provided for by increasing production, testifies to the strength of the diamond organization, and justifies the policy of maintaining large reserve stocks. How far the large increase in the value of the gems sold reflects the enhanced buying powers of the American public, and how much is to be attributed to hoarding, either because of fears of further monetary inflation, war, revolution, or the natural effort to dodge growing taxation, it is impossible to say.

Crisis at South Crofty

If the Government Mineral Development Committee in 1949 thought it worth saying that "if South Crofty Mine is to be kept open it is urgently necessary for new pumps to be provided to avoid the risk of total closure of the mine through breakdown of the existing out-of-date Cornish pumps...", how much more urgent and necessary is it to re-state these words to-day. The procurement of electric pumps to replace the old Cornish 80-in. engine built in 1857 and the 90-in. engine built in 1873 at New Cook's Kitchen shaft has long been at the top of the company's agenda. Not so long ago prospects for obtaining them seemed bright. The Ministry of Supply came out in favour of supporting the financial expenditure of £50,000 needed to purchase the electric pumps but later the Treasury professed it could not see the writing on the wall, though the message was there for all to see.

Recently *The Mining Journal* (November 10, 1950) had occasion to draw attention not only to the pumping troubles at South Crofty but also to the wider danger inherent in Crofty's situation, of the irretrievable flooding of the whole pool area.

Continued activity by Mr. Harry Rich, chairman, and his fellow directors, was rewarded by the raising of £30,000 and later, after the price of tin began to rise, a further £50,000 was guaranteed them by bankers. Orders for the electric pumps were placed at once and although it was known that the pumps would not be delivered in under eighteen months, in the circumstances it was all that could be done.

The original folly of not implementing the committee's report reaped its own harvest just before the New Year when the beam of the Cornish pumping engine at New Cook's Kitchen shaft broke in two and crashed to the ground. Fortunately, no one was hurt but the position of the mine is grave owing to the rising water, and, with one engine wrecked, skip bailing and the emergency pumping plant cannot deal successfully with the incoming water.

In this connection our Cornish correspondent writes that in spite of the three throw ram pumps at Bickford's shaft (which do not pump from the mine bottom) and the bailing tanks, the water is gaining at the rate of 50 gallons per minute. The crux of the situation is to keep the water out of the 315 level. Hope has been abandoned of excluding it from the 340 level and a double doored dam, which will allow water to flow in either direction, has been erected on this level to prevent the water going along into Robinson's shaft. This improvisation is expected to prove to be the solution but its successful operation is contingent upon preventing the water in the Cook's Kitchen rising to 315 fathoms.

Expenditure has been authorized up to £20,000 to obtain emergency pumping plant but one trouble is that at present there is no electric cable underground except at Bickford's shaft. To cope with this situation a £2,000 cable has been ordered and the Electricity Authority have given it a high priority so that emergency pumps can be installed. Later this cable will also serve to supply the new pumping plant aforementioned.

Latest reports from the mine state that the emergency measures have now saved Crofty from being entirely flooded and if the situation does not worsen in the next four weeks the new plant, already on its way, will be able to clear the mine of the unwanted water.

Bremang's Life Greatly Extended

When shareholders of Bremang Gold Dredging convene for the extraordinary general meeting called for January 25, 1951, proposals will be submitted for their approval which will extend the profitable life of the company by 25 to 35 years. This arises out of negotiations which have now been concluded between Gold Coast Selection Trust and Bremang for the purchase by the latter of all the alluvial areas along the Offin and Jimi rivers in West Africa belonging to the Trust.

Circulars announcing particulars of the negotiated deal have been sent to shareholders of both companies and shareholders are informed that the areas concerned are estimated to contain 175,015,200 cu. yd. of alluvial deposits valued at 2.63 grains per cu. yd., estimated to yield 872,603 f.oz. gold.

As the areas on the Ankobra River, on which the company's four dredges are operating, become exhausted it is intended to transfer the dredges to the areas it is now proposed to acquire from the Trust. At present one dredge is working in ground expected to be worked out in a year's time and the other three dredges are operating in areas the life of which is estimated at eight to ten years. Transferring the dredges, installing the electric power, etc., will be charged against Bremang.

Payment to the Trust for the sale of its areas is to be satisfied in part by the issue of Bremang shares at par to the nominal value of £91,650, making this company's paid-up capital £1,054,212. The remainder will be met by the payment to the Trust of a royalty of 4 per cent of the gross value of gold recovered from the areas. It is thus expected that Bremang will derive a working profit, taking all the areas into consideration and deducting gold duty and royalty payable to the Trust estimated at £430,000, of about £3,750,000.

To enable Bremang to fulfill that part of the purchase consideration to be satisfied by the issue of stock, an increase in the company's authorized capital will be necessary. It is therefore proposed to increase the authorized amount from £1,000,000 in 5s. shares to £1,250,000.

Apex (Trinidad)'s Strong Financial Position

Although crude oil production of Apex (Trinidad) Oilfields for the year ended September 30, 1950, was down by 49,000 bbl. to 2,833,000 bbl. compared with the 1949 output, casing head gasoline output was up by 181,000 gallons to 3,549,000 gallons. The outcome showed to advantage and net oil profit after taxation increased to £1,735,557 compared with £1,217,915 in 1949.

From the £865,905 (£661,763) available, dividend payments amounting to 1s. 9d. per 5s. share or 35 per cent, absorbed £192,500 (30 per cent and £165,000), general reserve received £450,000 (£300,000) and the carry forward amounted to £223,405 compared with £196,763.

The balance sheet of Apex tells another kind of success story. Net asset backing for the £550,000 of issued capital is covered more than five times over; Government securities, cash and tax reserve certificates amount to £2,914,804; accumulated provision for depreciation is £4,160,499 on a book valuation of the fixed assets of £5,087,896, and net current assets work out at £3,172,188.

In fact the company has exemplary history. Dividend payments stretch back in an unbroken string from 1922 and judging by the above-quoted figures the company must be, relative to its effective capital, one of the more wealthy oil concerns. Perhaps the chairman, Mr. Malcolm Maclachlan, at the meeting on January 24 next, might enlighten shareholders as to the extent resources will continue to be built up and for what purpose.

Company Shorts

Hendies Gold Mine (in voluntary liquidation).—A first and final distribution to shareholders of 1s. 2½d. per share, representing the total of the company's net cash assets, is to be made on January 18, 1951.

Holfontein T.C.L. Gold Mining.—An extraordinary meeting of this company is to be held in Johannesburg on February 7, 1951, to consider proposals for voluntary liquidation. From February 1, 1951, the transfer register will be closed, and in the event of liquidation, will not be re-opened.

"Crits" and "Trams" Options Extended.—The validity of the life of the option certificates on shares in Consolidated Rand Investment & Trust ("Crits") and Transvaal Mining & Finance ("Trams") has now been extended. The options to take up "Crits" 5s. shares at 15s. will now expire on December 31, 1951, and the options to take up "Trans" 10s. shares

Roberts Victor Diamonds, Ltd.—It has been announced that at the adjourned Extraordinary General Meeting of Shareholders held in Johannesburg on December 29, 1950, it was unanimously agreed that the Special Resolution to place the Company in liquidation (which was submitted for consideration) be withdrawn.

Thos. W. Ward.—It has been announced that the company has received notification from the stockholders' representative of Wolverhampton Steel and Iron (1946) Ltd. and Birchley Rolling Mills Ltd., both of which are subsidiary companies, that the terms of compensation under the Iron and Steel Act have now been agreed.

Dominion Reefs (Klerksdorp) have announced that on the night of December 30, 1950, the hoist motor in the Mackenzie shaft broke down necessitating a complete rewind. Johannesburg electricians estimate that the job will take a fortnight. In the meantime the machines and underground labour has been transferred to other sections.

Possibility of Tati Re-opening.—In his statement accompanying the report and accounts Mr. J. H. Hawes, Chairman of Tati Goldfields, said that the increased price of gold consequent upon devaluation made it a possibility that the mine might be profitably re-opened and that a mining expert in the Union was inspecting the property. The year's operation to March 31, 1950, resulted in a loss of £2,369; a balance of £1,570 remained to be carried forward. The balance sheet showed a surplus of current assets over current liabilities amounting to £45,868.

DIVIDENDS

Anglo American Corp. of South Africa 6% (Feb. 7)
Brakpan Mines 22½% (Feb. 7)
Climax Rock Drill 5% (Jan. 9)
Daggafontein Mines 65% (Feb. 7)
East Daggafontein Mines 17½% (Feb. 7)
New Era Consolidated 12½% (Feb. 7)
Nigel Van Ryn Reefs 5%
Rambutan 5% *i* (Jan. 13)
Springs Mines 12½% (Feb. 7)
Tanganyika Concessions 8%
Western Reefs Exploration 25% (Feb. 7)

i interim * tax free

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED

(Incorporated in the Union of South Africa)

Announces

For the information of shareholders in Companies in the Group and the Public, that

AN EXHIBITION OF PHOTOGRAPHS ILLUSTRATING THE DEVELOPMENT OF THE NEW GOLD FIELD IN THE ORANGE FREE STATE, SOUTH AFRICA

is to be held at

THE LIBRARY of the CENTRAL HALL, WESTMINSTER, LONDON, S.W.1.

from

TUESDAY, 16th JANUARY until FRIDAY, 19th JANUARY, 1951

Admission Free ***Open 10-7 daily.***

Issued by the London Office of the Corporation, 11, Old Jewry, E.C.2.

Rand Mine Returns for December

The last monthly outputs for 1950 of the Rand mines made an agreeable though not consistent showing. The Christmas holiday was responsible for a contraction in ore milled, which resulted in a rearward trend in profits and rise in costs. Of the 43 producers announcing results, 30 dealt with smaller tonnages, six crushed the same and seven put through a larger amount ofore. Lower profits were announced in the case of 26 mines, while 17 registered increases. Working costs were higher with 29 mines, ten lower and four worked at the same unit figure as in November.

A satisfactory increase in earnings was shown by several members of the Central Mining group, including City Deep, Con. Main Reef, East Rand Props and Rose Deep, but Crown Mines made a poor showing with a setback of £19,197 in profit and a rise of 2s. 4d. per ton in costs. There was a drop of 8s. 7d. per ton in Transvaal Gold's costs. Blyvoor maintained its record tonnage but profit was £2,000 down and costs registered a rise of 1s. 1d. per ton.

All mines under the authority of the Gold Fields announced lower profits and higher figures of working costs, brought about by lower tonnages excepting in the case of Venterspost. Robinson Deep suffered a loss of £9,580 in profit (covered by insurance) as a result of an underground fire and severe pressure burst, while costs rose 1s. 11d. per ton. Libanon's costs went up 1s. per ton and there was £5,000 less shown in profit.

Brakpan, Daggafontein and "Sallies" of the Anglo American group reported increased profits. There was a downward trend in costs with the two former, a rise with East "Dagga" while Springs and S.A. Lands worked at the same figure as in November.

Lower tonnages and higher unit costs were general with the members of Union Corporation. Geduld was the only mine of the group to announce a higher profit but East Geduld reported a drop of £17,500.

Although West Rand dealt with more ore, costs were 8d. per ton up and profit £2,000 down. The other member under the aegis of General Mining, South Roodepoort, announced a slightly lower profit and rise in costs.

The five members of the "Johnnies" group dealt with smaller tonnages although all, with the exception of Government Areas, were able to make larger profits.

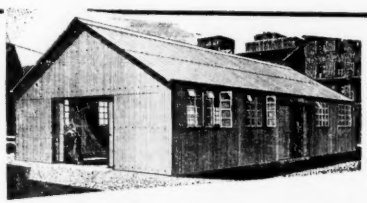
The lower tonnage and profit with slightly higher costs of Rand Leases, belonging to Anglo Transvaal, were quite normal in view of the December festivities.

Of the "outside" mines, New Kleinfontein made a consistent showing, dealing with the same tonnage for a similar figure of costs, while earnings were practically the same as in the previous month.

The December returns for the Rand Mine producers are given below:—

Blyvoor.—88,000 tons yielded 63,017 oz.; profit £583,483.
Brakpan.—117,000 tons yielded 21,943 oz.; profit £71,251.
City Deep.—163,000 tons yielded 33,820 oz.; profit £107,140.
Consol M.R.—185,000 tons yielded 25,292 oz.; profit £56,532.
Crown.—259,000 tons yielded 47,515 oz.; profit £135,613.
Daggafontein.—238,000 tons yielded 59,566 oz.; profit £473,091.
Durban Roodepoort.—175,000 tons yielded 30,215 oz.; profit £106,235.
East Champ D'or.—32,000 tons yielded £57,458; profit £11,298.
East Dagga.—97,000 tons yielded 18,197 oz.; profit £91,276.
East Geduld.—131,000 tons yielded 39,330 oz.; profit £313,322.
E. Rand Prop.—211,000 tons yielded 41,713 oz.; profit £168,119.
Geduld.—102,000 tons yielded 15,336 oz.; profit £54,152.
Govt. Areas.—226,000 tons yielded £391,123; profit £60,555.
Grootvlei.—190,000 tons yielded 42,773 oz.; profit £304,517.
Libanon.—74,000 tons yielded 13,682 oz.; profit £42,558.
Luipaards Vlei.—98,000 tons yielded 18,214 oz.; profit £62,669.
Marievale.—58,000 tons yielded 14,615 oz.; profit £76,549.
Modder "B".—52,000 tons yielded 6,012 oz.; profit £10,216.
Modder Deep.—10,000 tons yielded 1,221 oz.; profit £2,914.
Modder East.—114,000 tons yielded 13,798 oz.; profit £43,855.
New Kleinfontein.—109,000 tons yielded 14,198 oz.; profit £46,112.
New Klerksdorp.—8,310 tons yielded £12,244; profit £1,208.
New Modder.—23,500 tons yielded 2,571 oz; profit £2,071.
New State.—64,000 tons yielded £98,442; profit £5,054.
Nigel.—35,500 tons yielded 4,829 oz.; profit £4,826.
Randfontein.—338,000 tons yielded £494,772; profit £60,229.
Rand Leases.—187,000 tons yielded £372,548; profit £95,093.
Rietfontein.—26,500 tons yielded 5,829 oz.; profit £29,546.
Robinson.—106,000 tons yielded 17,225 oz.; profit £15,552.
Rose Deep.—80,000 tons yielded 11,284 oz.; profit £25,206.
Simmer & Jack.—119,000 tons yielded 19,341 oz.; profit £32,401.
S. A. Lands.—111,000 tons yielded 19,303 oz.; profit £78,588.
South Roodepoort.—26,500 tons yielded 5,955 oz.; profit £21,711.
Spaarwater.—10,100 tons yielded 2,339 oz.
Springs.—176,000 tons yielded 22,801 oz.; profit £50,465.
Sub Nigel.—64,000 tons yielded 23,936 oz.; profit £147,982.
Transvaal Gold.—29,000 tons yielded 4,985 oz.; profit £2,196.
Van Dyk.—98,000 tons yielded 14,698 oz.; profit £22,336.
Venterspost.—104,000 tons yielded 21,862 oz.; profit £90,741.
Village M. R.—34,400 tons yielded £64,914; profit £19,101.
Vlakfontein.—33,000 tons yielded 12,299 oz.; profit £68,051.
Vogelstruisbult.—73,000 tons yielded 18,140 oz.; profit £80,231.
Welgedacht.—32,000 tons yielded 3,827 oz.; profit £4,324.
West Rand Cons.—208,000 tons yielded 33,822 oz.; profit £167,843.
Western Reefs.—92,000 tons yielded 21,248 oz.; profit £116,022.
Wit Gold.—57,000 tons yielded £84,726; profit £6,101.
Wit. Nigel.—10,000 tons yielded £32,263; profit £2,330.

THORNS INDUSTRIAL BUILDINGS



SAVE TIME AND MONEY

Have you considered the many ways in which Thorns Buildings can effect economies in building costs and help production to get into full swing at the earliest possible moment? If not, write for our list of buildings, suitable for Factories, Stores, Garages, Offices, Canteens, etc.

Enquiries invited for home or export. Please write, stating your requirements.

J. THORN & SONS LTD
Box No. 15X, BRAMPTON ROAD, BEXLEYHEATH, KENT
Telephone: BEXLEYHEATH 305

BD303C

LAKE GEORGE MINING

LARGER OPERATING PROFIT

SIR GODFREY FELL'S REVIEW

The Fourteenth Annual General Meeting of Lake George Mining Corporation, Ltd., was held at the Armourers' Hall, 81, Coleman Street, E.C., on January 9, **Sir Godfrey Fell, K.C.I.E., C.S.I., O.B.E.,** the Chairman, presiding.

The following is the Chairman's address, which was circulated with the report and accounts for the year to June 30, 1950:

Both the balance sheet and profit and loss account of the corporation, and the consolidated balance sheet and consolidated profit and loss account of the corporation and its subsidiary company, Lake George Mines Pty., Ltd., are circulated with this report, together with the annual report of the general manager, Mr. W. H. Tyler.

The consolidated profit and loss account shows that the group operating profit at £498,813 was £173,970 more than in the previous year, when operations suffered owing to prolonged strikes. Depreciation of fixed assets at £43,432 is greater by £3,667. The amount provided for maintenance of plant and buildings has been increased by £14,400 to £22,400. The provision of a larger sum is necessary to meet taxation, which amounts to £294,845, compared with £200,000 for the preceding year, including £76,000 in respect of prior years. After writing off £9,601 for preliminary expenses and share capital reduction expenses, providing £61,050 for the interim dividend and £61,050 for the proposed final dividend, making a total distribution of 2s. per share, less tax at 9s. in the £, the amount carried forward, £85,954, is £6,435 more than last year.

Having dealt with the figures shown in the consolidated accounts, it is unnecessary to refer to the accounts of the corporation which are covered by the former.

Diamond drilling to a total of 2,239 ft. was carried out on the surface, while a further 7,079 ft. were completed underground for the purpose of geological investigation, delineating and asmpling the ore bodies, and for engineering and other purposes.

GENERAL MANAGER'S REPORT

I invite particular attention to the passage in Mr. Tyler's annual report regarding the results of the geological mapping of 11,200 acres of the prospecting area immediately surrounding the mine.

In a recent letter, Mr. Tyler comments as follows on the subject of "gossans":

"Firstly, I would like to draw your attention particularly to the section on gossans in the report accompanying the regional geological map. A glance at the map will show that these outcrops are very widespread and that we are really dealing with a region of base-metal deposition and not with isolated occurrences of lead-zinc-copper lode. This region extends to the south and north, and we now have a large area protected which we hope to survey in the next field season. In such a large area it is difficult to believe that the Elliott's and Keating's lodes are the only ones worth exploiting, and further detailed work on the gossans should bring out some interesting facts."

During the year, 22 new cottages were completed and occupied by the staff, and the third bunkhouse, to provide additional single quarters, was put into service. The total number of cottages built by Lake George Mines Pty., Ltd., including one completed since the close of the year, now amounts to 173.

Owing to the number of men now offering their services for employment at Captain's Flat, housing accommodation will still be insufficient until further cottages are built, and tents are being erected as a temporary measure. The recent rise in the metals production bonus paid to employees has encouraged the recruitment of labour. On October 23 the metal producation bonus amounted to £A7 1s. 7d. per week, with a basic wage rate of £A7 6s. 0d. per week as from November 6, 1950.

Operating costs, as Mr. Tyler's report indicates, continue to rise, owing to increases in basic wages and new awards made by the Arbitration Court for higher rates of pay, which in turn have seriously raised the cost of plant, equipment and stores. For these reasons and owing to the fact that in the previous year the mill only operated for 80 days and the mine for 67, owing to labour troubles, comparisons of operating costs are valueless.

MAIDEN DIVIDEND

A maiden interim dividend of 1s. per share was paid on September 25, 1950, and you will be asked to sanction the payment of a final dividend of 1s. per share, making a total distribution of 2s. per share gross for the year ended June 30, 1950. If you approve the directors' recommendation, the dividend will be paid on January 16, 1951.

Operations at Captain's Flat are continuing at a satisfactory level, and for the 20 weeks ended November 19, 1950, 75,335 tons of ore were milled, an average of 15,067 tons for each four-weekly period. The output of concentrates for the same period amounted to 5,914 tons of lead concentrates, 10,776 tons of zinc concentrates and 1,757 tons of copper concentrates.

Shipments of lead and zinc concentrates to the Continent and to the U.K. are being made to the fullest possible extent by Lake George Mines Pty., Ltd., in order to take advantage of the present high prices for lead and zinc. Given a continuance of these prices and stable labour conditions, the subsidiary company should show considerably enhanced earnings in the current financial year.

SATISFACTORY INDUSTRIAL RELATIONS

Members will, I feel sure, note with satisfaction the statement in Mr. Tyler's report that industrial relations were particularly satisfactory throughout the year, and that the rate of absenteeism from all causes has dropped. It is to be hoped that, as more houses become available, the turnover of men will cease to be so abnormally high. It is the settled policy of the Board of Lake George Mines Pty., Ltd., to make housing and living conditions so attractive that labour will be glad to make their permanent homes at Captain's Flat.

Your Board once again wish to thank Mr. Tom Owen, the chairman of the operating company, and his colleagues in Sydney, and Mr. Tyler and his staff at Captain's Flat, for their valuable services during the year under review. We have lately received letters from several shareholders advocating the transfer of control of the Company to a board domiciled in Australia with a view to avoiding the present excessive burden of United Kingdom taxation.

CHAIRMAN'S REMARKS

The Chairman, addressing the meeting, said:

Our case is, of course, only one of several which have attracted the interest of the investing public during recent months. Our case varies, however, very materially from those of companies, such as the Northern Rhodesian copper companies, some of whom have recently decided to transfer control.

In their case, the London registered company had to suffer taxation on the whole of the profits earned at the mine. In our case Lake George Mining Corporation only pays United Kingdom taxation on so much of the profits earned by the operating company as is remitted to this country. Taking the long view, therefore, it is the unanimous opinion of your directors that it would not be in the best interests of the shareholders to upset the existing organization at the present time.

The report and accounts were unanimously adopted and the retiring directors were re-elected.

AN INTRODUCTION TO METALLIFEROUS MINING

SIDNEY HIGHAM, B.Sc., A.R.S.M.

This new book is a concise but complete guide to the developing and exploiting of a metalliferous mine, using modern equipment and plant. The author is Head of the Mining Department, Bulawayo Technical College. viii and 337 pages (8in. x 5¼in.), 265 illustrations. 30s. Post 10d. Inland, 1s. Abroad. net.

CHARLES GRIFFIN & COMPANY LTD.
42 DRURY LANE, LONDON, W.C.2

The World's Greatest Bookshop

FOYLES
+ FOR BOOKS +

Large dept. for Technical Books

New and secondhand Books on every subject. Stock of 3 million volumes

We Buy Books, too

119-125 CHARING CROSS RD., LONDON, W.C.2
Gerrard 5660 (16 lines) ✱ *Open 9-6 including Saturdays*

MALAYAN TIN DREDGING, LTD. SOUTHERN MALAYAN TIN DREDGING LTD.

The adjourned annual general meetings of Malayan Tin Dredging, Ltd., and Southern Malayan Tin Dredging, Ltd., were held on Wednesday last at 73, Cheapside, London, E.C.2.

The following are extracts from the statements of the Chairman, **Mr. H. Ashworth Hope,** circulated to shareholders:

In 1945 natural rubber was probably the scarcest universally important commodity in the world. Yet the Socialist Government pegged the price paid to Malayan producers at 10d.—a figure bearing no relation to the law of supply and demand.

Why, however, should 10d. have been considered good enough for Malaya when the price fixed by Ceylon was 1s. 6d. and every pound was eagerly purchased?

Malayan rubber producers had to face heavy expenditure on rehabilitating their estates which had suffered from the devastation of Japanese occupation, a fate which Ceylon escaped. In 1945 and 1946 Malaya produced 412,000 tons of rubber, and had that country been paid only 1s. 6d. per lb., as was paid for Ceylon rubber, its producers would have received an additional £30,000,000.

It is problematical just how much the Socialist Government lost between 1945-1949 by selling rubber to the U.S.A. at prices bearing no relationship to those America charged us for her surplus commodities.

After rubber, tin was probably in shorter supply than any other commodity. Yet tin from Empire sources was sold compulsorily at prices bearing little relation to its true worth, thereby incurring losses I estimate at not less than £20,000,000 during the period 1945-48.

The price of tin during the war and in post-war years should have reflected its scarcity value and the minimum price it should have commanded in relation to other metal prices controlled by the U.S.A. would have been in the region of £560 per ton. The average price we obtained for tin over the period 1945-1948 was only £400.8 per ton, and although this country paid hard-earned dollars for other base metals—for example, copper—we did not receive an adequate price for the tin which we sold to the U.S.A.

A real and indisputable loss of dollars occurred when the pound was devalued in September, 1949. The American price for tin was 103c. per lb. at that time, which on devaluation of sterling to $2.80, represented an equivalent sterling price of £824 per ton. Nevertheless, tin was sold to America at prices ranging from £725 down to £600 per ton.

Malaya is indeed being called upon to pay a heavy price for its "protection" under its treaty with the British Government.

Malayan and U.K. taxation together amount to 240 per cent or nearly 2½ times the amount received by shareholders.

SOCIALIST POLICIES AFFECTING TRADE

There would appear to be at least four policies they intend to carry out if again returned to power, each and all of which directly and adversely affect our group of companies and the tin industry as a whole:

1. Another Capital Levy.
2. Statutory limitation of dividend.
3. A "curb on profits."
4. More nationalization—a red light to the tin-mining companies.

Regarding a Capital Levy, Sir Stafford Cripps gave a solemn undertaking in Parliament that the levy he then proposed would be a "once for all" levy.

With regard to statutory limitation of dividend, I would remind you that Mr. Calligan, Parliamentary Secretary to the Admiralty, has recently urged that shareholders should be compelled to have their dividends limited by law.

With regard to "Curb on profits," Mr. Griffiths, without demur, accepted a composite resolution at Margate, on behalf of the Party Executive, which spoke of "high profits received by employers," carrying the implication that these profits were responsible for the high prices.

Why did not Mr. Griffiths at once state the truth by pointing out it is not high profits that cause high prices, but that high profits are the result of the fortuitous rise in the price of commodities?

Private enterprise free from irritating and unnecessary interference gy Governments both British and Malayan will be the salvation of Malaya in the future.

What is required is a clear and unequivocal statement by the Prime Minister not only that Malaya is and will remain a protected country as long as the treaties endure, but that Singapore is and will remain a British Colony, and there is no question of withdrawing from either.

The reports and accounts were adopted.

SUNGEI BESI MINES and AYER HITAM TIN DREDGING

The adjourned Annual General Meetings of these Companies were held on January 10 at 73, Cheapside, London, E.C.

The following are extracts from the statement of the Chairman, **Mr. G. W. Simms,** circulated to shareholders:

The Secretary-General of the United Nations, in accordance with the provisions of the Havana Charter, convened a United Nations Conference on October 25, 1950, to discuss a commodity control agreement on tin.

Although many essential details of the draft agreement have been left blank, the main principle is control of exports, which involves restriction of production in conjunction with a buffer stock. The leader of the British Colonial and Dependent Territories delegation referred to the dangers that might result from unemployment in consequence of a surplus of production in tin-producing countries, and stated that the scheme was calculated to bring stability to the tin industry. As far as Malaya is concerned, this is in direct conflict with the facts established by experience under the last restriction scheme.

The labour force employed varies with production.

RESTRICTION AND UNEMPLOYMENT

In Malaya the sale and transfer of quota permitted under the last restriction scheme was a direct incentive to the mine owner to close down, dismiss his labour force, and sell his quota. It created a condition of affairs where one party was paid for not producing tin while the other party, by reason of the purchase price for quota, accepted what is equivalent to a lower price for his product. Price fluctuations were greater during restriction than before it. The estimates of production and consumption formulated by the Statistical Committee of the International Tin Study Group at their meeting at Paris in March, 1950, show an estimated surplus of production over consumption of 45,000 tons, 55,000 tons, and 59,000 tons for the years 1950, 1951 and 1952.

As far as the dredging section of the Malayan tin industry is concerned, the best hope for the future lies in proving and developing low grade areas requiring dredges of big capacity and great digging depth.

There is no hope of any significant increase in terms of world production from the dredging section of the industry for some time to come.

There is little prospect of a significant increase over the next two years from the gravel pump section of the Malayan industry even if the rate of incoming mines be greatly accelerated as the result of the high tin price. The possibility of a material increase in production from the remaining categories within the Malayan tin industry can be ruled out.

As regards Indonesia, there would appear to be even less chance of a significant increase in production from dredging in the near future than there is in the case of Malaya.

The figures for Bolivia since the end of the war indicate a decreasing rather than an increasing production.

It will be found that world tin consumption for commercial purpose in 1950 is unlikely to be far short of world production and that during the last quarter of the year it has been running at a rate in excess of production.

As regards 1951, unless industrial production in the U.S.A. falls off during the year, which at present seems unlikely, or the U.S.A. Government again places restrictions on the use of tin for commercial purposes, it is reasonable to expect that world consumptive demand will substantially exceed world production.

Looking further ahead it is of interest to consider the population figures and tin consumption per head for important countries during the ten year period 1929-38 and also the post-war population figures for those countries.

Generally speaking, the greater the degree of industrialization the greater the tin consumption per head.

Although tin consumption will rise and fall as world industrial production rises and falls, nevertheless the possibilities for increased consumption in the near future as countries such as India and Russia continue to develop industrially are obvious. Also in countries such as the U.S.A. the natural increase in population should result in a substantial increase in the consumptive demand.

As regards the future, therefore, it is much easier to visualize a material increase in the consumptive demand for tin than it is to visualize a material increase in its production.

One of the more unfortunate effects of a buffer stock is the elimination of the premium on Straits Tin which, in the past, has proved a valuable asset.

The most urgent problem before the tin industry is that of under-production not over-production. Tin, like any other commodity, is subject to competition from possible substitutes, and I think that if it is to hold its own the tin-producing countries would be well advised now to concentrate on developing their tin resources as rapidly as possible and increasing production to meet the demand.

The report and accounts were adopted.

Topical News in Brief

Indian Manganese Ore Deposits Magnetically Surveyed.—It is learned that the Geophysical Section of the Geological Survey of India is carrying out magnetic surveys of the manganese ore deposits in the Balaghat district.

New Ore Field Discovered in North Sweden.—A new ore field in Arvidsjaur and Pitea parishes, North Sweden, discovered in the course of electric prospecting last summer and believed to be an offset of the large Kristineberg field has proved to hold iron pyrites containing gold, silver and copper. Test borings will now be made to ascertain whether mining is worthwhile.

M.F.P. Safety Circular, No. 185.—The Minister of Fuel and Power has decided to postpone for the time being the making of the Quarries (Electricity) (Amendment) General Regulations, 1950, and the Metalliferous Mines (Amendment) General Regulations, 1950, which were published in draft with Safety Circular, No. 184. Revocation of the Quarries General Regulations (Electricity) (Exemption) Order, 1947 and the Metalliferous Mines General Regulations (Exemption) Order, 1947, which allow the continued use of certain electrical apparatus and cables, is similarly postponed.

S. Rhodesia A Potential Platinum Producer.—Southern Rhodesia has long been known to possess vast deposits of platinum, and at one stage it was believed that Rhodesia could challenge Russia as the world's leading producer but the difficulty has always been the question of extraction. Now, through the efforts of a syndicate of Bulawayo business men, a leading British firm of consultants has found a way of extracting platinum from several tons of ore which have been sent from the Colony. The next stage will be the erection of a pilot plant to prove that the platinum can be mined on a commercial basis. If this is possible, a large-scale mining venture will be launched. An exclusive prospecting order covering 70 sq. miles in the Belingwe district has just been granted by the Government in favour of the syndicate. So far, at least 80,000,000 tons of ore, which has been found to bear nickel and copper as well as platinum, has been proved. The nickel and copper will be produced as by-products.

Christmastime.—Once again the *Mining Journal* received at Christmastime a delightful variety of calendars and Christmas cards from friends and well-wishers. In particular, we would like to acknowledge the good wishes for the New Year received from the following:—British Insulated Callender's Cables Ltd., The Climax Rock Drill & Engineering Works Ltd., George Cohen Sons, & Co. Ltd., Cyprus Government, Denver Equipment Co. Ltd., Hamill, Toms Ltd., Philip Henderson & Co., Holman Brothers Ltd., Hugh Wood & Co. Ltd., Mavor & Coulson Ltd., Oelrichs Advertising Ltd., Robey & Co. Ltd., Ruston-Bucyrus Ltd., Stephens Advertising Service Ltd., The Council and Members of the Stock Exchange, The Tin Research Institute, J. W. Vickers & Co. Ltd., Thos. W. Ward Ltd., Zinc Development Association. We would like to take this opportunity of again wishing all our friends at home and abroad a Happy and Prosperous New Year.

£100,000 available for the purchase of your MACHINE TOOLS also small Engineering concerns considered. Box No. 502, Mining Journal, Ltd., 15, George Street, Mansion House, London, E.C.4.

CROWN AGENTS FOR THE COLONIES

DRILLERS required by the Government of Nigeria for the Rural Water Supplies, Public Works Department, for a tour of 18 to 24 months in the first instance. Salary, including expatriation pay £800 a year plus temporary increase of £60 a year. Drilling allowance £120 a year. Outfit allowance £60. Free passages for the officer and his wife and assistance towards the cost of children's passages. Liberal leave on full salary. Candidates should be able to smith their own tools and carry out running repairs to diesel and petrol engines and must have had good experience of water boring in both soft and hard formations particularly with percussion rigs using cable tools. Apply at once by letter, stating age, full names in block letters and full particulars of qualifications and experience and mentioning this paper to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M. 12967.A on both letter and envelope. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

Mining Men and Matters

Mr. Alfred Baer has been appointed a director of New Broken Hill Consolidated.

Mr. H. A. R. Binney has been appointed director and secretary of British Standards Institution, in succession to the late **Mr. Percy Good.**

Mr. R. L. Chantrill has been elected a director of the British Thomson-Houston Export Co. Ltd. Mr. Chantrill has been chief technical engineer to the company during the past 18 months, during which time he has travelled extensively abroad on the company's business.

Dr. F. E. Keep has been appointed to the board of Trepca Mines in place of **Mr. A. J. Brett.**

Mr. H. A. Lavers has been appointed metallurgist at the London headquarters of the Colonial Development Corporation.

Mr. S. S. Taylor has relinquished his position as chairman of the board of The Consolidated Mines Selection Co. Ltd. He is, however, retaining his seat on the board. **Mr. Comar Wilson** is succeeding Mr. Taylor as chairman of the company.

Mr. D. A. B. Watson was appointed a director and deputy general manager of Johannesburg Consolidated Investment Co. as from January 1, 1951, and relinquishes his appointment as consulting engineer in South Africa. **Mr. I. M. Campbell Rodger** and **Mr. W. S. Findlay** were appointed consulting engineers in South Africa as from the same date.

Mr. Eric Weiss and **Mr. D. K. Bailey** have been appointed to the board of Minerals Separation.

Mr. A. R. O. Williams has been elected a director of Taquah and Abosso Mines.

The Manchester Metallurgical Society will hold a meeting on Wednesday, January 31, at the Engineers' Club, Albert Square, Manchester, at 6.30 p.m., to hear a paper by Mr. J. Preston on the Metallurgy of Titanium.

Aluminium Industry Council Established.—The aluminium industry in the United Kingdom has now established an Aluminium Industry Council, the address of which is 60, Calthorpe Road, Birmingham 15. The primary objects of the council are to provide the necessary liaison for consultation and discussion between all branches of the industry on matters of general policy. Mr. Kenneth Hall, managing director of Northern Aluminium Co., will be the Council's first chairman, and Mr. H. R. Murray Shaw has been appointed as the director.

The Institution of Mining and Metallurgy will hold its Fourth Ordinary General Meeting in the Apartments of the Geological Society, Burlington House, Piccadilly, London, W.1, on Thursday, January 18, 1951, at 5 p.m., when the following four papers will be submitted for discussion: "A Method for the Preparation of High-Purity Indium Metal" by Mr. T. A. A. Quarm; "Factors Affecting the Reduction of Zinc Oxide by Carbon"; and "A Study of the Reduction of Zinc Metaferrite by Carbon," both by Messrs. D. W. Hopkins and A. G. Adlington; "The Detection of Columbite by Ultra-violet Light" by Dr. Robert A. MacKay.

DIRECTORATE OF COLONIAL GEOLOGICAL SURVEYS

VACANCIES EXIST FOR TWO GEOLOGISTS (one immediately and one in six months) whose main duties will be the making of photogeological maps from vertical air photographs under the direction of the Principal Geologists. The salary scale is £650 x 25 — £850, but as service would be at Camp Griffiss, Bushy Park, Teddington, the London scale quoted above would be subject to intermediate differentiation which at the minimum of the scale, would mean a reduction of £15 per annum. Superannuation would be provided under F.S.S.U. terms and other conditions would be those in force for the United Kingdom Scientific Service.

Candidates should hold a good Honours degree in Geology and should have experience of field mapping, preferably in the Colonies or under similar conditions; some knowledge of geological interpretation and mapping from air photographs would be an advantage. Candidates must be at least 27 years.

Application forms may be obtained from the Ministry of Labour and National Service, Technical and Scientific Register (K), York House, Kingsway, London, W.C.2, quoting number G.333/50A.

Application forms must be returned to January 31, 1951.

Metal and Mineral Trades

THE BRITISH METAL CORPORATION LIMITED

HEAD OFFICE
PRINCES HOUSE, 93 GRESHAM STREET, LONDON, E.C.2
Tel Monarch 8055

AND AT

17 SUMMER ROW, BIRMINGHAM
Tel. Central 6441

47 WIND STREET, SWANSEA
Tel. Swansea 3166

OVERSEAS ASSOCIATES

THE BRITISH METAL CORPORATION (AUSTRALIA) PTY., LIMITED, SYDNEY AND PERTH

THE BRITISH METAL CORPORATION (CANADA) LIMITED, MONTREAL

DREW, BROWN, LIMITED MONTREAL

THE BRITISH METAL CORPORATION (INDIA) LIMITED, CALCUTTA AND BOMBAY

THE BRITISH METAL CORPORATION (SOUTH AFRICA) (PROPRIETARY) LTD., JOHANNESBURG

C. TENNANT, SONS AND CO. OF NEW YORK, NEW YORK

CONSOLIDATED TIN SMELTERS, LIMITED.

PRINCES HOUSE, 95 GRESHAM STREET, LONDON, E.C.2

Telephone: MONarch 7661 3 *Telegrams: CONSMELTER, PHONE LONDON*

PROPRIETORS OF THE FOLLOWING BRANDS OF LAMB & FLAG AND STRAITS TIN

ENGLISH (COMMON & REFINED) CORNISH MELLANEAR PENPOLL

STRAITS E. S. COY., LTD., PENANG

BUYERS OF ALL CLASSES OF TIN ORES

Sole Selling Agents: VIVIAN, YOUNGER & BOND, LIMITED.

8, BASINGHALL STREET, LONDON, E.C.2. *Telephone:* MONarch 7221/7

IN ORES, CONCENTRATES, SLAG and BY-PRODUCTS

GOLD

SILVER

PLATINUM

We are SMELTERS and REFINERS. *Please send full particulars and samples:*

DERBY & Co. Ltd. 62 - 63 Cheapside, London, E.C.2

SMELTING and REFINING WORKS: BRIMSDOWN (near London) Middlesex (Established 1797)

Telegrams: PLATIVET, LONDON. Telephone: CITY 2633

Cable Address: WAHCHANG, NEW YORK

WAH CHANG CORPORATION

(FORMERLY WAH CHANG TRADING CORPORATION)

233 BROADWAY - - NEW YORK 7, NEW YORK

TUNGSTEN TIN

BUYERS	SELLERS
Tungsten Concentrates, Tungsten Tin Concentrates	Tungsten Concentrates to Buyers' Specifications
Mixed Tungsten Ores	Tungsten Salts, Tungsten Powder
Tungsten Tailings, Scrap, Tips, Grindings	Tungsten Rods and Wires
Tin Concentrates—Tin Dross, Tin Furnace Bottoms	Tin Ingots, Tin Oxides, Tin Chlorides

PLANT—GLEN COVE, NEW YORK

THE BRITISH TIN SMELTING COMPANY LIMITED

English Refined Tin

"HAWTHORNE" Brand

W. E. MOULSDALE & CO., LTD.
General Agents
2 CHANTREY HOUSE, ECCLESTON STREET, LONDON

THE STRAITS TRADING Co. Ltd.

SINGAPORE

Straits Refined Tin

"Straits Trading Co. Ltd." BRAND

Correspondents in U.K.
W. E. MOULSDALE & CO., LTD.
2 CHANTREY HOUSE, ECCLESTON STREET, LONDON, S.W.1

Telegrams: "BASSETT, PHONE, LONDON." Telephone: MANSION HOUSE 4401/3.

BASSETT SMITH & Co. Ltd.

(Incorporating George Smith & Son)

15/18 LIME ST., LONDON, E.C.3

METALS,
ORES (Copper, Zinc, Lead, &c., Complex),
RESIDUES, SKIMMINGS & ASHES
NON-FERROUS SCRAP

THE ANGLO METAL COMPANY LIMITED

2 & 3, CROSBY SQUARE,
LONDON, E.C.3
(Members of the London Metal Exchange)

NON-FERROUS METALS
ORES & CONCENTRATES
BULLION

Telephone: LONDON WALL 6341 (Private Branch Exchange)
Telegrams: NUCLIFORM PHONE LONDON
Cables: NUCLIFORM, LONDON

GEORGE T. HOLLOWAY & CO. LTD.

METALLURGISTS & ASSAYERS,
ORE TESTING, WORKS AND
METALLURGICAL RESEARCH LABORATORIES

Atlas Road, Victoria Road, Acton,
LONDON N.W.10

Telephone No.: ELGAR 5202
Tels. & Cables: NEOLITHIC LONDON

A. STRAUSS & CO. LTD.

FOUNDED 1875

37-39 LIME STREET, LONDON, E.C.3

Telephone: Mansion House, 8276

MERCHANTS, EXPORTERS, IMPORTERS

NON-FERROUS METALS
SCRAP RESIDUES

METAL REFINERS

Members London Metal Exchange

Telegrams: NONFERMET TELEX, LONDON
Cables: NONFERMET LONDON
Telephone: MANSION HOUSE 4521 (10 lines)

HENRY GARDNER & CO. LTD.

Non-Ferrous Metals
Ores Minerals & Residues
Rubber
General Merchandise

2 METAL EXCHANGE BUILDINGS
LONDON, E.C.3
and at
BIRMINGHAM, MANCHESTER and GLASGOW

METAL TRADERS LTD.

7 Gracechurch Street, LONDON, E.C.3

New York Representative:
Metal Traders Inc., 67 Wall Street

Buyers and Sellers of

NON-FERROUS METALS
ORES AND MINERALS

TEL. ADDRESS: SEROLATEM, STOCK, LONDON
TELEPHONES: MANSION HOUSE 7275-7276-7277

BROOKSIDE METAL CO. LTD.

(Owned by Metal Traders Ltd.)

Honeypot Lane, STANMORE, Middx.

Buyers and Sellers of

ALL NON-FERROUS SCRAP METALS
Specialists in ALUMINIUM

TEL. ADDRESS ALUMINIUM, STANMORE
TELEPHONES: EDGWARE 1646-1647

THE ANGLO CHEMICAL & ORE COMPANY LIMITED
PALMERSTON HOUSE, BISHOPSGATE, LONDON, E.C.2
Importers and Exporters MINERALS · ORES · RESIDUES · CHEMICALS · NON-FERROUS METALS & SCRAP
TELEPHONE: LONDON WALL 7255 (5 lines) TELEGRAMS: CHEMORE

ESTABLISHED 1869
BLACKWELL'S METALLURGICAL WORKS LTD.
THERMETAL HOUSE, GARSTON, LIVERPOOL, 19
MAKERS OF
FERRO ALLOYS, NON-FERROUS ALLOYS, RARE METALS
BUYERS AND CONSUMERS OF
COLUMBITE, TANTALITE, TUNGSTEN MANGANESE and all ORES.
Works, Garston. Telegrams: Blackwell, Liverpool.

EVERITT & Co. Ld. 40 CHAPEL STREET LIVERPOOL
Teleg. Address: Persistent, Liverpool Phone: 2995 Central
SPECIALITY
MANGANESE PEROXIDE ORES,
We are buyers of:—
WOLFRAM, SCHEELITE, MOLYBDENITE VANADIUM, ILMENITE, RUTILE, ZIRCONIUM and TANTALITE ORES
Suppliers of:—
FERRO-ALLOYS & METALS NON-FERROUS ALLOYS

RHONDDA METAL CO. LTD.
1 HAY HILL BERKERLEY SQ. LONDON W.1
Works: PORTH, GLAM.
PHOSPHOR COPPER
SILICON COPPER MANGANESE COPPER
ALL NON-FERROUS ALLOYS
Telephone: MAYFAIR 4654 Cables: RONDAMET

METALLO CHEMICAL REFINING CO. LTD.
BALTIC HOUSE, LEADENHALL STREET, LONDON, E.C. 3
Telephone: Royal 5611/7 Cables: Metalrefin, London
Buyers and Refiners of
All Non-Ferrous Ores, Residues, Scrap Metals

LEOPOLD LAZARUS LIMITED
Creechurch House, LONDON, E.C.3
(Also at BIRMINGHAM and MANCHESTER)
Telegraphic Address: Orminiaz, London
Buyers of:
NON-FERROUS SCRAP, ORES AND RESIDUES
Sellers of:
SEMI-MANUFACTURED NON-FERROUS METALS

P. & W. MACLELLAN LTD.
129 TRONGATE, GLASGOW
NON-FERROUS METALS all classes
INGOT SCRAP MANUFACTURED
Letters: P.O. Box 95 Ciagow
(*Telegrams;* Maclellan, Glasgow *Telephone:* Bell 3403 (20 lines

ALFRED HARRIS & Co. (Richmond) Ltd.
FOR ALL SCRAP METALS
Specialities:—
NICKEL MOLYBDENUM TUNGSTEN
MANOR PARK, RICHMOND, SURREY *Phone: 0028/9*

The Commercial Smelting and Refining Co. Ltd.
MACKINTOSH LANE, HOMERTON, LONDON, E.9
Manufacturers of
Gunmetal, Bronze, Brass and White-metal Ingots to all Standard Specifications
Buyers of
Scrap Metals and Metallic Residues
Telephone: Amherst 5446 (3 lines) *Telegrams:* Metsmelt, Hack, London

MINING & CHEMICAL PRODUCTS, LTD.
MANFIELD HOUSE, 376, STRAND, W.C.2
Telephone: Temple Bar 6511 3 Works: ALPERTON
Telegrams: "MINCHEPRO, LONDON" WEMBLEY, MIDDLESEX
Buyers of silver ores and concentrates
Smelters and Refiners of
BISMUTH
ORES, RESIDUES & METAL
Nickel and chrome plating
Refined and Commercial ARSENIC, CADMIUM, INDIUM, SELENIUM, CAESIUM SALTS, THALLIUM
Manufacturers of
FUSIBLE ALLOYS SOLDER WHITE METALS
ANODES OF TIN, CADMIUM and ZINC

BUYERS & SELLERS | all grades NON-FERROUS METAL SCRAP and RESIDUES; REDUNDANT METALS
RICHMOND METAL CO., LTD.
20 Queen Caroline Street,
HAMMERSMITH,
London, W.6
Phone: RIVerside 4289 - 7359 - 7201
WORKS ACCUMULATIONS promptly cleared

Consult
JOHN DALE
LIMITED
about Aluminium Alloy Gravity Die Castings

This Governor housing for a Diesel pump mechanism was die cast in Aluminium Alloy by John Dale. A useful application of Aluminium Alloy where lightness combined with strength, clean natural finish, etc. are vital.

JOHN DALE LTD.
Dept. TS.7, LONDON COLNEY, ST. ALBANS, HERTS. Tel: London Colney 3141

CUPELS

MAGNESIA CUPELS and ASSAY MATERIAL "MABOR" BRAND, as supplied to MINTS, MINES and ASSAYERS throughout the World.

MABOR (1944) LIMITED
(Founded 1900)
THE PIONEERS OF MAGNESIA CUPELS
Registered Office: 310 Winchester House, London, E.C.2
Phone: London Wall 5089 *Tel. Address:* Maborlim, London
Agencies: SALEM, INDIA: MONTREAL, CANADA: PERTH, W.A.
Supplies through Agents, the Trade, or direct

The Mining Journal
1951
ANNUAL REVIEW NUMBER

Summarizes events and statistics of 1950

Will be Ready in May

● **Orders for copies should be placed direct, or through Newsagents.**
5s. 0d. post free.

Write: The Publisher, Mining Journal, 15 George Street, London, E.C.4

COMPLEX

& LOW GRADE

MATERIALS *

are treated on

toll or bought

outright by

Capper Pass

* containing principally TIN and/or LEAD whether free from or combined with any of the metals COPPER, ANTIMONY, BISMUTH and SILVER

Send Samples to them at
P.O. Box 237 BRISTOL ENGLAND

MINING TYPE LOCOMOTIVES

5 to 15 TONS Standard range

BATTERY (flameproof or non-flameproof) OR TROLLEY

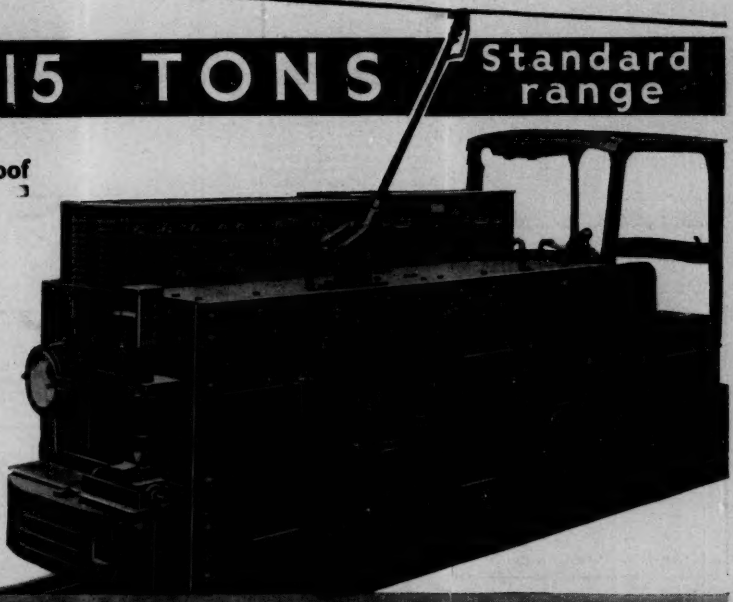
•

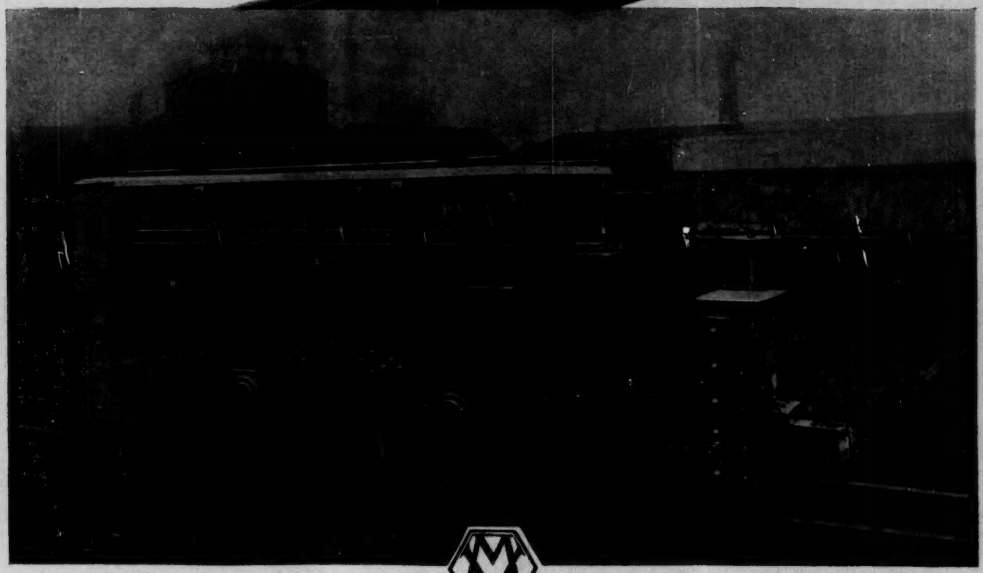
SUITABLE FOR ALL THE USUAL GAUGES

•

FOR SURFACE OR UNDERGROUND

•





METROPOLITAN-VICKERS ELECTRICAL CO. LTD.

TRAFFORD PARK, MANCHESTER 17

Member of the A.E.I. group of companies.

METROVICK *Traction of traditional dependability*

K/L001

Printed in England for The Mining Journal Ltd., by Samuel Sidders & Son Ltd., 115, Salusbury Road, London, N.W.6. Registered as a Newspaper.